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I. MOLECULAR AND CELLULAR BIOLOGY

11 ORAL
GLOBAL TRANSCRIPTOMIC CHANGES INDUCED BY GROWTH DIFFERENTIATION FACTOR 11 IN HUMAN HEPATOCELLULAR CARCINOMA CELLS

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Introduction. Growth differentiation factor 11 (GDF11) is a member of the superfamily of the transforming growth factor beta. GDF11 has been poorly explored in cancer, particularly in hepatocellular carcinoma (HCC). It is well known that GDF11 displays its effects on poorly differentiated cells, such as HCC. In the present work, we were aimed to figure out the global transcriptomic changes exerted by GDF11 in human HCC cells using next- generation sequencing technology (RNA-Seq). **Material and methods.** Huh7 cell line on culture was treated with recombinant human GDF11 (50 ng/mL) for 72 h. Total RNA was extracted with Trizol reagent. For sequencing it was used TruSeq Stranded Total RNA Library Prep Kit, the sequencing was performed in a HiSeq 4000 Systems, the analysis was using the RNA express app, among other bioinformatics tools. **Results.** The transcriptomic changes elicited by GDF11 on Huh7 cell line revealed 657 differentially expressed genes (reported like Log2 and fold change) in comparison with the cells without treatment. In ontology analysis, were observed 310 genes implicated in biological process like metabolism, development, cell- to- cell interaction, growth, etc. while in cellular function, process like membrane communication, mitochondrial function and endoplasmic reticulum were affected. The results were corroborated by MTT assay, Western blot and immunofluorescence. **Conclusion.** GDF11 induced a differential gene expression profile that clearly confers the loss of aggressive feature of HCC cells, positioning GDF11 as a remarkable therapeutic target in human HCC.

The authors declare that there is no conflict of interest. CONACYT: CB-252942, Fronteras de la Ciencia 2015-02-1320.

14 CARTEL
SERUM LEVELS OF INSULIN-LIKE GROWTH FACTOR BINDING PROTEINS (IGFBP) 1 AND 2 DURING BILE DUCT LIGATION (BDL) IN A MURINE MODEL

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Background and aim. Insulin-like Growth Factor Binding Proteins (IGFBP) have a role in distinct cellular processes including proliferation, apoptosis and senescence. Additionally they are implicated in wound healing by regulating extracellular matrix synthesis. This family of proteins is mainly expressed in the liver and secreted to the bloodstream. IGFBP-1 is involved in hepatic regeneration by increasing its expression. IGFBP-2 is increased in serum during carcinogenic processes. We aimed to assess serum levels of IGFBP 1 and 2 in a murine model of liver damage induced by Bile Duct Ligation (BDL). **Material and methods.** Male CD-1 mice weighing 25 ± 3 g and 10 weeks old underwent BDL (n = 5), a second group of mice subjected to surgery without ligation (SHAM, n = 4) was included as control. After 7 days of surgery, liver and blood samples were collected. Serum was obtained and IGFBP 1 and 2 were quantified by multiple suspension array. Histological analysis was performed in sections stained with Hematoxylin-Eosin, Sirius Red and Masson's Trichrome, and classified by Ishak score. Data is

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shown as Mean ± SD and were analyzed by Student's t test. P < 0.05 was considered significant. **Results.** After 7 days of the BDL, mice exhibited mild fibrosis, whereas no histological alterations were observed in the SHAM group. Both IGFBP-1 and IGFBP-2 significantly increased compared with controls (SHAM) at 7 days post-surgery (IGFBP-1: SHAM = 1.56 ± 0.54, BDL7 = 13.83 ± 2.49 ng/mL; IGFBP-2: SHAM = 76.83 ± 1.78, BDL7 = 183.40 ± 22.66 ng/mL). **Conclusions.** Serum levels of IGFBP-1 and IGFBP-2 significantly increased with liver damage due to the BDL at 7 days. These proteins have distinct functions, in this study, probably associated with the processes of liver repair and regeneration.
This work was funded by Conacyt (CB-221137).

15 ORAL
SERUM LEVELS OF INSULIN-LIKE GROWTH FACTOR-BINDING PROTEINS (IGFBP) 2 AND 7 IN A MURINE MODEL OF HEPATIC FIBROSIS INDUCED BY THIOACETAMIDE (TAA)

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Background and aim. Insulin-like Growth Factor Binding Proteins (IGFBP) have a role in distinct cellular processes including cellular proliferation, apoptosis and senescence. Additionally they are implicated in wound healing by regulating extracellular matrix synthesis. This family of proteins is mainly expressed in the liver and secreted to the bloodstream. IGFBP-2 is increased in serum during carcinogenic processes. IGFBP-7 is considered a tumor suppressor. However, the dynamics of their serum levels during fibrosis and previous to the tumoral stage are not known. We aimed to assay IGFBP 2 and 7 levels in a murine model of liver damage induced by TAA. **Material and methods.** Female C57BL/6 mice weighing 22 ± 3 g and 12 weeks old were administered with increasing doses of TAA (50-400 mg/kg, n = 7 per group) thrice a week for 4, 6, and 8 weeks. Mice receiving the same number of doses of saline solution (control, n = 5 per group) were included. Serum was obtained and IGFBP 2 and 7 were assayed by a multiplex suspension array. Histological analysis was performed by Hematoxylin-Eosin, Sirius Red and Masson's Trichrome, and classified according to Ishak score. Data is shown as Mean ± SD and were analyzed by one way ANOVA followed by the Tukey post hoc test. p < 0.05 was considered significant. **Results.** Increasing degree of liver fibrosis was observed according to the number of TAA doses. IGFBP-2 significantly decreased in TAA mice compared to control at all treatment times, and at week 6 compared to 4 (C = 156.0 ± 31.59, TAA4 = 105.4 ± 20.17, TAA6 = 61.9 ± 16.50, TAA8 = 87.1 ± 18.68 ng/mL; p < 0.001). On the other hand, IGFBP-7 increased significantly with respect to control at 6 and 8 weeks of treatment (C = 15.4 ± 3.66, TAA4 = 27.5 ± 5.25, TAA6 = 33.6 ± 9.12, TAA8 = 35.2 ± 14.57 ng/mL; p < 0.001). **Conclusions.** Serum levels of IGFBPs exhibit changes during liver damage. IGFBP-2 decreases its secretion while the degree of fibrosis progresses. In contrast, IGFBP-7 increases probably associated to a hepatoprotective mechanism. Our results showed opposite effects in the concentrations of these proteins during fibrosis previous to hepatocellular carcinoma.
This work was funded by Conacyt (CB-221137).

27 CARTEL
ACUTE HEPATIC TOXICITY CAUSED BY SEVEN EXTRACTS OF HERBAL ORIGIN IN AN EXPERIMENTAL MODEL

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Background. The number of cases reported of herbal hepatotoxicity is underestimated. Data from other countries show an occurrence of liver damage related to herbal supplements ranging from 2% to 16% of all cases of hepatotoxicity identified. **Objective.** To evaluate the morphological changes in the liver in a mouse model produced by the consumption of the following plants: *Gymnema sylvestre* (Gurma), *Agathosma betulina* (Bechu), *Morus alba* (Mora de árbol), *Crataegus oxyacantha* (Espina de Albar), *Arctostaphylos pungens* (Pingüica), *Laurus nobilis* (Laurel), *Hamamelis virginiana* (Avellana de bruja). **Material and methods.** Preclinical, double-blind trial. It was carried out in a research unit in pharmacology and bioterium of a third level center. 8 lots, of 6 mice each, were used, female mice of the BALB-C strain, non-pregnant; in each batch, a single dose of a single herbal extract was administered from the plants mentioned in the objective, in 3 different doses, and one batch with placebo; the extract was administered by oro-gastric cannula. The morphological changes in liver were analyzed with optical microscopy, on day 14 of the administration or at the time of death if it occurred before. **Results.** The extract of the leaf of *Crataegus oxyacantha* caused morphological changes compatible with hepatotoxic damage with a necro-inflammatory pattern such as acute and vascular hepatitis. *Agathosma betulina* and *Gymnema sylvestre* caused necro-inflammatory damage of acute hepatitis type. *Arctostaphylos pungens* only developed vascular damage. *Laurus nobilis*, *Morus alba* and *Hamamelis virginiana* did not develop sufficient morphological changes to conclude any pattern of hepatotoxic damage. **Conclusion.** Our study showed hepatotoxicity associated with 4 herbal extracts, with acute hepatitis type necroinflammatory damage produced by *Crataegus oxyacantha*, *Agathosma betulina*, *Gymnema sylvestre*, and vascular damage by sinusoidal dilation produced by *Arctostaphylos pungens*, the latter has shown that the consumption of its fruit seems to be safe if it is used for a short time; however, there is no record of the use of his sheet. The use of these plant species must be controlled.
Disclosure: The authors declare no disclosure.

38 ORAL
THE DELETION OF ANTIAPOPTOTIC MCL-1 ISOFORM GENERATES AN INCREMENT IN ENERGETIC METABOLISM OF CELLS DERIVED FROM HUMAN HEPATOCARCINOMA WITH CHOLESTEROL OVERLOAD

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Introduction. Hepatocellular carcinoma (HCC) is a lethal disease throughout the world. However, the molecular mechanisms underlying hepatic carcinogenesis remain poorly understood. The global incidence of HCC has progressively increased during the last decades. The role of cholesterol in steatohepatitis is considered a key factor in nonalcoholic steatohepatitis. The expression anti-apoptotic Mcl-1 has been reported as a factor of resistance in several types of tumors, we investigated the expression of Mcl-1 in hepatocarcinoma cells and its relationship with cholesterol overload. Experimental evidence indicates that the increase in the rate of proliferation and the resistance to apoptosis (by overexpression of antiapoptotic proteins) such as Mcl-1 are closely associated with an increasing requirement of cholesterol, which involves from its synthesis to its regulation and distribution, said processes are altered in several cell types derived from cancer. **Aim.** Determine the relationship between Mcl-1 and mitochondrial capacity in parameters of metabolic functionality in hepatocarcinoma cells with cholesterol overload. **Material and methods.** Human cell line of hetpatocarcinom Huh-7 was used. Long isoform (MCL-1L) knockout was performed using CRISPR/Cas9 technology, using specific guide RNAs. Both lines were treated with the complex cholesterol-cyclodextrin at a concentration of 160 mg/mL and 10 mM respectively for 90 min. Cell proliferation assays were performed, the migration was carried out by wound healing. To determine the protein content of Mcl-1, the total cholesterol content was quantified using the O-phthaldehyde method (OPA). To determine the ratio of Mcl-1 and energy metabolism in HCC, Oxygen rate (OCR) and extracellular acidification rate (ECAR) parameters were measured using Seahorse technology. **Results.** These results show that Mcl-1 has a close relationship in energy metabolism, given that the delation of the antiapoptotic isoform of Mcl-1 increased the rate of oxygen consumption, as well as extracellular acidification. The results suggest that cholesterol has a direct effect on the level of cellular aggressiveness, the cell migration assays confirm that cholesterol enhance the migration of Huh-7 cells, on the contrary the elimination of cholesterol is reflected in the decrease of the migration, likewise it was observed that the overload of cholesterol increases the amount of reactive oxygen species (ROS) and in the same way an increase in the protein content of Mcl-1 was observed. **Conclusion.** Given these results we can say that the non-antiapoptotic functions of Mcl-1 play a very important role in the progression of HCC since Mcl-1 seems to be a modulator of energy metabolism in Huh-7, likewise cholesterol overload it is a determinant factor for the progression of HCC. The cholesterol overload increases tumorigenic parameters characteristic of the transformed cells. The participation of Mcl-1 in cholesterol overload is a determining factor for the understanding of molecular mechanisms that could serve as early or preventive markers for HCC.

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39 CARTEL
GROWTH DIFFERENTIATION FACTOR 11 (GDF11) RESTRICTS CELL PROLIFERATION IN HEPATIC TUMOR CELLS THROUGH GLUCOLYSIS AND LIPID METABOLISM

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Background and aim. Cancer cells are characterized by alterations in metabolic pathways to fulfill the biosynthetic demands associated with proliferation. Part of this phenotype translates in a significant reliance in the use of glucose as an energy source and increased lipid synthesis to support cell replication. The growth differentiation factor 11 (GDF11) has been recently described as an important regulator of proliferation and differentiation in cells exhibiting stemness features. However, its role in metabolic features of cancer cells has not been characterized yet. Previous data in our working group indicate that GDF11 induces an antitumorigenic effect in the Huh7 hepatocellular carcinoma cell line. In the present work we focused to elucidate the regulatory effects induced by GDF11 in glycolysis and lipid metabolism in hepatocellular carcinoma (HCC). **Material and methods.** Human HCC cell line Huh7 was cultured with and without the presence of 50 ng/mL rhGDF11 for 3 days. We assayed cell proliferation, the lipid content was determined by Oil red staining, the total cholesterol content was measured by colorimetric assay, the glycolytic activity was determined by the extracellular acidification rate (ECAR) and the oxygen consumption (OCR) employing automated methods using Seahorse technology (Agilent), markers associated to lipogenesis were identified by Western blot. **Results.** GFD11 significantly reduced proliferation in Huh7 at 72 h of treatment. Real-time ECAR analyses provided information of glycolytic flux parameters, the presence of glucose, oligomycin and 2-deoxyglucose

indicated reduced glycolysis, glycolytic capacity and glycolytic reserve, respectively, induced by GDF11 in HCC cells. Neutral lipid accumulation in HuH7 cells examined by Oil red staining declined upon GFD11 exposure and this effect was accompanied by a decrease in the content of cholesterol and a downregulation in lipogenic and mevalonate pathway proteins, suggesting GDF11 reduced lipogenesis. **Conclusions.** The antitumorigenic response observed by GDF11 indicates that it is associated with changes in the glycolic rate of cancer cells as well as the decrease in lipogenic enzymes and lipid content characteristic of the aberrant lipogenesis of tumor cells.
CONACyT: CB252942 y Fronteras de la Ciencia 1320.

44 CARTEL
ROLE OF DOXAZOSINE AND CARVEDILOL IN CELLULAR REGENERATION IN A REVERSION MODEL OF LIVER CIRRHOSIS IN HAMSTER

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Background and aim. Fibrosis and liver cirrhosis are inflammatory manifestations caused mainly by the collagen accumulation in areas of functional importance such as the parenchyma, caused by the activation of hepatic stellate cells and Kupffer cells. During these processes, various histopathological changes occur, such as: ascites, steatosis and portal hypertension mainly. It is known that the sympathetic nervous system has an important role in the regeneration of the liver through the activation of liver stem cells and bile ducts. The aim of this project is to evaluate the efficiency of α/β adrenoblockers in the structural and functional regeneration of the liver in a liver cirrhosis model. **Material and methods.** The liver cirrhosis model was developed with CCl4 in hamster for 18 weeks, 4 weeks after, Doxazosin, Carvedilol and its co-administration were applied. Liver enzymes and liver proteins were evaluated. The morphological changes, glycogen repository and collagen content were analyzed by histology through: H & E, PAS and Syrian Red. The genetic expression of regeneration markers: HGF, Ckt18, Ckt7, c-Myc, Afp, was evaluated by qPCR. The statistical analysis was assessed with the GraphPad Prism 6.0 software. **Results.** At sacrifice, the control and treated livers with Carvedilol and Carvedilol + Doxazosin showed a decrease in the regenerative nodules and accumulation of fat on the surface, compared with the cirrhotic group. A reduction of transaminases, and increase of serum albumin was observed, in comparison with the cirrhotic group ($P < 0.05$). Histologically, we observed restitution of the hepatocyte cords, decrease in type I collagen and increased of intracellular glycogen in the treated groups, comparing them with cirrhotic group. Doxazosin and Carvedilol + Doxazosin groups showed decreased expression of Afp and c-Myc ($P < 0.05$), and increased expression of Ckt18, Ckt7 and HGF ($P < 0.05$) compared to the cirrhotic and cirrhotic + vehicle groups. **Conclusions.** The treatments: Carvedilol and Doxazosin in a hamster cirrhosis model induced with CCl4 have an important role in the control, reversion and/or regeneration of liver cirrhosis in hamsters, which suggests these drugs as possible therapeutic adjuvants.

54 CARTEL
NON-ALCOHOLIC FATTY LIVER DISEASE PROGRESSION AND ASSOCIATION WITH CELLULAR SENESCENCE IN AN EXPERIMETAL MURINE MODEL

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Background and aim. Cellular senescence is a mechanism that limits proliferation of damaged cells through the cell cycle arrest; its characteristic marker is the senescence-associated β-galactosidase (SA-β-gal). Association between cellular senescence and fibrogenic liver disease has been reported; accumulation of senescent hepatocytes leads to continuous activation of hepatic stellate cells and thereby fibrosis progression. The aim of this work was to evaluate the SA-β-gal activity in a murine model of non-alcoholic fatty liver disease (NAFLD) induced by a methionine and choline deficient diet (MCD). **Material and methods.** Male C57BL/6 mice, weighing 25 ± 5g and 14 ± 2 weeks old, were randomly assigned to receive either MCD diet or control diet (MCC) for 2-weeks or 8-weeks. Liver samples were collected; histological assessment was performed by Masson's Trichrome and Hematoxylin-Eosin in order to grade the samples by NAS and Kleiner-Brunt scores. Cellular senescence was evaluated in 6 μm frozen sections using a commercial kit (Abcam, USA), morphometric analysis of SA-β-gal activity was performed. Data is shown as Mean ± SD and were analyzed by one way ANOVA followed by the Tukey *post hoc* test. $p < 0.05$ was considered significant. **Results.** All subjects in the MCD group exhibited NAFLD [MCD2: simple steatosis (SS) = 50%, borderline NASH (B-NASH) = 43.75% and definite NASH (D-NASH) = 6.25%; MCD8: SS = 0, B-NASH = 21.42% and D-NASH = 78.57%)]; in contrast, no subjects with NAFLD were found in MCC group. Regarding fibrosis, MCC: F0 = 100%; MCD2: F0 = 26.31%, F1C = 73.68% and MCD8: F1C = 25% and F2 = 75%. SA-β-gal activity was significantly increased in NAFLD and in accordance to the time of treatment (MCC = 0.8955 ± 0.5880, MCD2 = 4.073 ± 1.076, and MCD8 = 6.808 ± 1,536 %, $p < 0.05$). **Conclusions.** Our results suggest that non-alcoholic fatty liver disease progression is associated to an increase in cellular senescence which is probably related to the fibrosis observed.
This work was funded by CONACyT (CB-221137).

55 CARTEL
ASSESSMENT OF INSULIN-LIKE GROWTH FACTOR BINDING PROTEINS (IGFBP) 1 AND 7 IN AN EXPERIMENTAL MODEL OF NON-ALCOHOLIC FATTY LIVER DISEASE

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Background and aim. Insulin-like Growth Factor Binding Proteins (IGFBP) share structural similarities; these proteins are mainly produced by the liver and secreted to the bloodstream. Serum levels of IGFBP-2 have been reported to be increased in patients with metabolic syndrome and IGFBP-5 is increased in NASH; however, no previous evidence indicating a role for IGFBP-1 and -7 in NAFLD is available and it is not clear whether their amount in the serum is related to the disease. We aimed to assess IGFBP-1 and -7 in both serum and liver of mice with NAFLD induced by a methionine and choline deficient diet. **Material and methods.** To induce NAFLD, 16 week-old C57BL/6 male mice weighing 25 ± 5g were fed either a Methionine-Choline Deficient (MCD) or a control (MCC) diet during 2, 8 or 12 weeks. Liver and serum samples were collected. Total protein was extracted from the liver and IGFBP-2 and -5 were assessed by multiple suspension array. Histological evaluation was performed in hematoxylin-eosin stained sections based on the Kleiner score. Data was presented as Mean ± SD and analyzed by one way ANOVA followed by Tukey test. $p < 0.05$ was considered significant. **Results.** Increased liver damage was observed after exposure to MCD diet. In liver no differences were observed for IGFBP-1; however, IGFBP-1 its serum levels were increased in MCD2, MCD8 y MCD12 compared to MCC (MCC = 5.90 ± 6.73, MCD2 = 157.99 ± 76.08, MCD8 = 101.77 ± 70.73 y MCD12 = 115.42 ± 39.16 ng/mL; $p < 0.05$). On the other hand, IGFBP-7 increased in the liver tissue in MCD12 compared with MCC (MCC = 60.45 ± 9.35, MCD2 = 72.09 ± 15.86, MCD8 = 81.53 ± 15.28, MCD12 = 84.22 ± 30.47 pg of protein/mg of tissue; $p < 0.05$); in serum, IGFBP-7 was also augmented in MCD2, MCD8 y MCD12 compared to MCC (MCC = 4.03 ± 1.05, MCD2 = 7.66 ± 3.29, MCD8 = 8.80 ± 1.80 and MCD12 = 8.13 ± 2.89 ng/mL; $p < 0.05$). **Conclusions.** IGFBP-1 increased only in serum of non-alcoholic fatty liver mice compared to control mice. In contrast, IGFBP-7 increases its synthesis in mice that were fed the diet for a longer time (MCD12), while in serum it was increased from 2 weeks.
This work was funded by CONACYT (CB-221137).

56 CARTEL
ASSESSMENT OF RETICULAR FIBERS AND FAT IN THE LIVER OF A MURINE MODEL OF INTERACTION OF HIGH-FAT DIET AND ETHANOL INTAKE

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Background and aim. Both, excessive alcohol intake and obesity are etiologies for fatty liver disease. Alcoholic liver disease (AFLD) and Non-alcoholic liver disease (NAFLD) are highly prevalent hepatic affections. We have previously reported the histological outcome from the interaction of two insults, a high-fat diet (HFD) and alcohol intake. Here, we aimed to quantitatively assess reticular fibers and fat depots in the liver of mice receiving ethanol and/or HFD. **Material and methods.** 58 C57BL/6, 10-12 weeks old mice were assigned to receive HFD and/or ethanol according to table 1 and 2. Liver samples were collected and stained with Oil Red (Fat) or Wilder (reticular fibers). Quantification was performed by Image J. Two-way ANOVA, $p < 0.05$. **Results.** Liver fat contents were higher in G3, G4 and G6 (all receiving HFD) and according to time, the longer the time the higher the fat depots. In contrast, reticular fibers were increased in G2 and G5 *vs.* G1 (control), but no effect of time was observed. **Conclusions.** Both insults induce differential liver damage, HFD increases fat depots depending on the time; in contrast, ethanol is associated to reticular fibers. These data shows independent features of each insult.

Table 1 (I.56). Groups on 4 month follow-up.

n	Group	Description	Time (months)
4	G 1	Chow Diet/Water	4
5	G 2	Chow Diet/Ethanol	4
5	G 3	HFD/ Water	4
5	G 4	HFD /Ethanol	4
5	G 5	1o HFD/Water 2o Chow Diet/Ethanol	4 4
5	G 6	1o Chow Diet/Ethanol 2o HFD/Water	4 4

Table 2 (I.56). Group on 6 month follow-up.

n	Group	Description	Time (months)
4	G 1	Chow Diet/Water	6
5	G 2	Chow Diet/Ethanol	6
5	G 3	HFD/ Water	6
5	G 4	HFD /Ethanol	6
5	G 5	1o HFD/Water 2o Chow Diet/Ethanol	4 6
5	G 6	1o Chow Diet/Ethanol 2o HFD/ Water	4 6

58 CARTEL
ACETYLSALICILIC ACID AS A POSSIBLE TERAPEUTIC OPTION IN THE TREATMENT OF HEPATIC FIBROSIS

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Background. Recent studies have shown that low-dose acetylsalicylic acid (ASA) administration in patients with chronic hepatopathy might be linked to slowing the fibrotic process; however, the molecular mechanisms by which ASA exerts these effects have not been elucidated. **Objective.** To evaluate the effect of ASA in experimental thioacethamide-induced hepatic damage. **Material and methods.** Male Wistar rats were used, divided in four groups (n = 8). Group 1: Control animals received the excipient (distilled water). Group 2: Had thioacetamide (TAA) administered intraperitoneally (200 mg/kg). Group 3: Received TAA and ASA (100 mg/kg orally). Group 4: ASA control. TAA was administered for 8 weeks every third day and ASA daily. Alanine Aminotransferase (ALT), γ-glutamyltranspeptidase (GGT) and alkaline phosphatase (AP) were quantified in plasma. Glycogen and collagen content, reduced glutathione (GSH) activity, and lipid peroxidation were measured in liver tissue samples. Histopathological analysis with hematoxiline-eosine and Masson's trichromic stains, Western blot for TGF-β and COX-2 were performed; and matrix metalloproteinase (MMP) 2 and 9 activity was assessed through zymography. The data obtained was analyzed by one-way ANOVA followed by a Tukey test; data was considered statistically significant when $p < 0.05$ between the groups. **Results.** TAA administration elevated ALT, γ-GTP and AP enzyme levels. An elevation of lipid peroxidation and collagen content was demonstrated in liver tissue, as well as a reduction in GSH activity and glycogen content. Additionally, there was an increase in TGF-β and COX-2 expression and MMP-2 and MMP-9 activity. ASA prevented the majority of changes produced by TAA. Histopathological analysis correlates to the biochemical and molecular findings. **Conclusion.** The results show that ASA prevents experimental fibrosis; the mechanism of action is probably related to its anti-inflammatory properties inhibiting COX-2, and its capability to lower TGF-β expression.

59 ORAL
EFFICIENT DELIVERY OF SHRNA TO HEPATIC CELLS AND THEIR INHIBITORY EFFECT ON THE EXPRESSION OF IFNR1 AND ON ADENOVIRUS TRANSDUCTION

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Introduction. The liver is one of the most important organs in the body. The chronic damage of this organ leads to fibrosis which can evolve to cirrhosis and hepatocellular carcinoma. Currently there are no efficient therapies for the treatment of fibrosis. Gene therapy has shown to have great potential for the treatment of liver diseases where adenovirus are the most used vectors. They are highly immunogenic and triggering an immune response with production of IFN-1, which signals with its receptor (IFNAR1) and activates an antiviral state in the cell. **Objective.** To silence the expression of IFNAR1 to improve the adenoviral transduction and the transgene expression and thereby achieve a therapeutic effect. **Material and methods.** We designed 3 shRNAs (sh-IFNAR1) and one irrelevant (Irre) which were cloned and amplified in DH5α cells. HuH7 cells were transfected by lipofectamine 2000 with the plasmid conataining the sh-IFNAR1 or sh-irrelevant in the presence or absence of adenovirus containing the GFP reporter gene. The gene expression of IFNAR1, and the cytokines IFN-α, TNF-α and IL-6 was quantified by RT-qPCR. The antiviral protein PKR and the transcriptional factor STAT1 were quantified by western blot. The expression of the GFP transgene was analyzed by flow cytometry. **Results.** The shRNA with the best inhibitory effect was shRNA-A, which was used in the following experiments. A reduction in IFNAR1 expression on the inflammatory cytokines TNFα, IFNα and IL-6 was observed. A decrease in the expression of IFN-α and PKR and a reduction on phosphorylated STAT1 was observed. **Conclusions.** The silencing of IFNAR1 by the shRNA decreases the antiviral response of adenovirus transduced cells, improving the adenoviral transduction and allowing higher transgene expression. This would allow to use lower doses of adenovirus in a clinical trials of gene therapy, obtaining expressions of the transgene for longer time.

67 CARTEL
S-ADENOSYL METHIONINE (SAM) REGULATES TRANSCRIPTIONAL EXPRESSION OF GENES INVOLVED IN ENDOPLASMIC RETICULUM AND MITOCHONDRIAL STRESS DURING HCV INFECTION

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Background and aim. Currently, the molecular mechanisms involved in hepatitis C virus (HCV) pathogenesis are not completely clarified. HCV triggers both endoplasmic reticulum (ER) and mitochondrial stress. SAM decreases the replication of HCV in vitro by unknown mechanisms, therefore the objective of this work was to evaluate the expression at the transcriptional level of genes involved in ER stress and genes with mitochondrial function, in hepatocytes that express non-structural proteins of HCV, treated with SAM. **Material and methods.** Huh7 HCV-replicon cells were treated with 1mM SAM. Total RNA and protein were extracted (24-72 h), and then cDNA was synthesized and real time-PCR was performed to quantify the mRNA expression of PDI, CHOP, BiP, Drp1 and Mitofusin 2 (MTF2), using RPS18 as an endogenous gene. T student test was performed for each condition and a p value < 0.05 was taken as significant. **Results.** Genes related to the ER stress like PDI, CHOP and BiP, presented differential transcriptional regulation; the level of PDI mRNA was increased 1.5 times at 48 h in cells treated with SAM compared to the non-treatment control. CHOP mRNA expres-

sion showed a slight decrease at 24 h (5%); however, from 48-72 h it was increased 1.3-2.4 times, respectively, while BiP mRNA expression showed no changes. As for the genes related to mitochondrial fusion and fission, MTF2 and DRP1, respectively; MTF2 mRNA level was increased 1.5-fold in cells treated with SAM at 48 h post-treatment. Finally, the DRP1 mRNA level showed a tendency to increase from 48 to 72 h post-treatment with SAM. **Conclusions.** SAM is able to upregulate mitochondrial stress related genes; this may be due to the decrease in HCV replication or as part of the compensation mechanisms induced by SAM. Interestingly, the upregulation of MTF2 mRNA is indicative of a possible increase in mitochondrial fusion; however, it is necessary to further investigate the expression at the translational level of this protein.

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68 CARTEL
INTERACTION AND INTERCELLULAR COMMUNICATION BETWEEN HEPATOCYTES AND HEPATIC STELLATE CELLS IN HEPATIC FIBROGENESIS CONTEXT INDUCED BY HCV

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Introduction. It has been described that the activation of hepatic stellate cells (HSC) is one of the main factors that influence hepatic fibrogenesis. The communication of cytokines and factors secreted by HSC and its effect on hepatocytes-HCV (+) in a context of fibrosis is unknown. **Material and methods.** 5 x 10^5 cells/well LX-2 and Huh7 were seeded [HuH7 were transfected in serum-free medium with pNS5A, pE2 or pcDNA (negative control)], subsequently treated with TGF-β 5ng/mL or Pirfenidone 1mM. Following the treatment, a total protein was extracted at 24 and 48 h post-transfection, quantified by Bradford and Western blot was performed under standard conditions. Relative quantification of proteins like TGF-β, α-SMA and Actin as endogenous control was performed. In addition, RNA was extracted with TRIzol at 24-48 h, cDNA was synthesized by RT-PCR. Specific primers were used for TGF-β, α-SMA, MMP-2 and TIMP-1 to perform qPCR. The relative expression was calculated with ΔΔCt with GAPDH as a normalizing gene. Zimography tests were carried out to determine the catalytic activity of MMP2 and MMP9 at 24-72h. **Results.** Different glycosylation levels of TGF-β were found in LX-2 cells and levels of α-SMA mRNA and protein were reached. LX-2/activated and LX-2 + TGF-β cells were found similar mRNA levels of TGF-β, MMP-2 and TIMP-1; in LX-2 + Pirfenidone cells, there were no changes at the transcriptional level of MMP-2 and TIMP-1. In the activation of MMP, the levels of MMP-2 and MMP-9 remained constant, only at 48 h increased the activity of MMP-2. In HuH7 cells, the presence of various glycosylation states of TGF-β was found. There is an increase in the activity of MMP-2 at 72 h in the presence of NS5A and increased activity of MMP-2 at 24-48 h in the presence of E2 + TGF-β. **Conclusions.** Activation of LX-2 was confirmed by α-SMA overexpression. Deregulation was recorded at the level of translation and transcription of genes related to the activation of LX-2 as TGF-β. A differential regulation of MMP-2 activation was presented in HuH7 + NS5A cells and HuH7 + E2 + TGF-β cells. This work has been subsidized by the CA123 Biochemistry and molecular medicine project. The authors do not report conflicts of interest.

86 CARTEL
HBsAg C107R MUTANT IMPAIRS THE SEROLOGIC DIAGNOSIS BUT NOT THE VIRAL REPLICATION

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Background. HBsAg is the main serologic marker for HBV infection. Molecular models suggest that Cys 107 forms a disulfide bridge with Cys 138 representing an important loop for HBsAg detection. **Aim.** To analyze *in vitro* the effect of HBsAg C107R mutant, in the replicative capacity of HBV and in the serologic detection of HBsAg. **Material and methods.** Replicons from HBV genotype H were constructed in PHY106 vector. Huh7 cells were transfected with replicons PHY-H2 and PHY-H6. Viral replication was determined by real time PCR from the supernatant of transfected cells. HBsAg secretion was detected by ELISA [Monolisa™ HBsAg ULTRA (Bio-Rad)] from the cell culture supernatant. Prediction of the secondary structure from the wild type and the mutant was made using the I-tasser server. The alignments were made with Protein-Encoder and visualized with Pymol software. **Results.** We obtained four different HBV replicons: pHY-H2, pHY-H6, pHY-H8 and pHY-H10. The nucleotide sequence of pHY-H6, pHY-H8 and pHY-H10 was identical. These plasmids compared with PHY-H2 had only two differences in the nucleotide sequence, T473C and C2389T. These changes had no impact on the viral proteins preC/C and X. In the SHBsAg a C107R mutant was detected which overlaps with V115A in the RT domain from the viral polymerase. Wild type PHY-H6 and mutant PHY-H2 were replicative competent but the mutant C107R impairs the HBsAg detection. Prediction of secondary structure suggests that 107R favors an alpha helix structure instead of the secondary spiral structure observed with the wild type 107C. **Conclusion.** The diagnosis of Hepatitis B could fail when only HBsAg is determined in patients infected with 107R SHBsAg mutant putting them at risk of liver disease progression.

77 CARTEL
CHARACTERIZATION OF THE OXIDATIVE DAMAGE IN THE LIVER OF MICE FED WITH DIFFERENT NAFLD-INDUCED DIETS

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Introduction. Hepatocellular carcinoma (HCC) is the most frequent malignant primary liver tumor worldwide; the nonalcoholic fatty liver (NAFLD), characterized by an overload of lipids, due to poor eating habits, particularly Mexico, where excess cholesterol in the diet plays a central role; so it is the type of lipid rather than the quantity that marks the progression of the damage in more advanced stages like HCC. In the present work we focus on knowing the differences in the hepatocarcinogenic process using different steatogenic diets, likewise causing chemical damage as initiator of this process, to know if the differential overload of lipids leads to a different carcinogenic damage. **Material and methods.** 14-days old C57Bl/6 mice, were treated, or not, with diethylnitrosamine (DEN, 10 ug / kg, ip). Both fed ad libitum with balanced regular diet (Chow), hypercholesterolemic (HCD, 1% cholesterol), deficient in choline and methionine (MCD), high fat (HFD) and western diet (WD). Mice were sacrificed at days 7, 15 and 30. Biochemical parameters of liver damage, redox status, DNA damage, lipogenesis and apoptosis were evaluated under Jo2 antibody treatment and caspase-3 activity oxidative damage was addressed by protein oxidation, and lipid peroxidation assays. Data are presented as means ± S.E. for at least three independent experiments. Comparisons between groups were made using *t* test. The results indicate greater damage in the liver from day 15, damage in the antioxidant response from day 7 in HCD, therefore there is acute damage due to the type of lipid; In addition, the DEN enhances oxidative stress. On the other hand, there was decreased apoptotic activity in HCD, HFD and WD, opposite in DCM, presenting a reparative effect in DNA characteristic of carcinogenesis, indicating that cholesterol could induce cell death resistance, however, these diets (HCD, HFD and WD) showed higher protein oxidation compared to MCD. In conclusion, our data indicate that high cholesterol diets condition to carcinogenic processes, compared with other steatogenic diets, since cholesterol is conferring a greater resistance to cell death.

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80 CARTEL
MICROBIOME ALTERATIONS IN THE COLON AND MESENTERIC LYMPH NODES ARE ASSOCIATED WITH AN IMBALANCE OF IMMUNE RESPONSE AND BACTERIAL TRANSLOCATION IN EXPERIMENTAL CHOLESTASIS

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Background and aim. Bacterial translocation in patients with cirrhosis is an important triggering factor for infections and mortality. In a model of bile duct ligation (BDL), the bacterial translocation appears within 24 h after liver damage. Nonetheless, the interrelation between intestinal microbiome composition and the inflammatory microenvironment in BDL model has not been described. The aim of this study was to determinate the microbiome composition in colon stools, mesenteric lymph nodes (MLN), and liver; as well as triggering pro and anti-inflammatory cytokines of bacterial translocation permissibility in BDL model. **Material and methods.** The diversity of microbiota in colon stools, MLN, and liver were determined by 16S rRNA pyrosequencing GS-Junior 454. Cytokine expression in MLN was analyzed by qRT-PCR. **Results.** Proteobacteria was the predominant phylum, which translocates to MLN and liver in cirrhotic rats. BDL induced a drastic intestinal dysbiosis at 8 and 30 days postligation, which was revealed by an increase in the relative abundance of *Sarcina, Clostridium, Helicobacter, Turicibacter,* and *Streptococcus* genera. In contrast, beneficial bacteria, for instance, *Lactobacillus, Prevotella,* and *Ruminococcus* importantly decreased in BDL groups. Mesenteric pro-inflammatory (TNF-α, IL-1β, IL-6, TLR-4) and regulatory (TGF-β, Foxp3, and IL-10) molecules at 30 days post-BDL were significantly increased. Conversely, only TGF-β and Foxp3 were significantly augmented at 8 days post-BDL. **Conclusions.** Dysbiosis in colon and MLN are linked to an imbalance in the immune response; therefore, this might be an important trigger for bacterial translocation in experimental BDL model.

Conflict of interest. The authors declare that there are no conflicts of interest.

85 CARTEL
INTERFERON β1a TREATMENT *IN VITRO* ONLY HAS A MILD RESPONSE IN HBV-GENOTYPE A, GENOTYPES C AND H ARE NO-RESPONDERS

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Introduction. Interferon beta 1 (IFNβ1a) has been used in antiviral therapy for chronic hepatitis B patients. Genotype H is

the most prevalent in Mexico. No studies are about HBV genotype H with IFNβ1a neither *in vitro* nor with patients. Evidences suggest that genotypes A and B are better responders to IFNα compared to genotypes C and D. **Aim.** To investigate the antiviral effect of IFNβ1a in Huh7 cells transfected with genotypes A, H and C. **Material and methods.** Huh7 cells were transfected with 0.7 μg of HBV replicon genotype A, C and H using lipofectamine 2000 according to the manufacturer's instruction. After 24 h of transfection cells were treated with 1000 U/mL of IFN-β1a (AXUAREB, PISA). Treatment was repeated at 48 h. HBsAg secretion was quantified with MonolisaTM HBsAg ULTRA (Bio-Rad) in 100 μL of the cell culture supernatant. Viral replication was determined by real time PCR from the supernatant of transfected cells. Two standard curves were generated: one for HBV-DNA quantification and the other to quantify the plasmid (HBV replicon) to be subtracted to avoid interference with the quantity of the viral DNA. **Results.** HBsAg were reduced in 8% in genotypes A and H, whereas with genotype C the S/CO was very similar between IFNβ1a treated and untreated transfected cells. Related with the viral load, only genotype A reduced 0.8 Log10 at 24 h of treatment. Effect that a 48 h of treatment was not shown. Genotyps H and C were unresponders to IFNβ1a treatment in this experimental model. **Conclusion.** Only genotype A has a mild response to IFNβ1a, genotype H has a similar behavior to genotype C. Further studies must be performed to study the effect of diffent treatments based on IFNs type 1.

92 CARTEL
OBTAINMENT OF A 3D SCAFFOLD FROM AN EXTRACELLULAR LIVER MATRIX OF WISTAR RAT BY DECELLULARIZATION

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Background. The etiology that originates liver disease and cause hepatic terminal failure is diverse and the shortage of organs for transplants promotes the search for new solutions that allow a long and better quality of life for these patients. Currently, tissue engineering studies novel decellularization and recellularization techniques that facilitate the generation of functional organs, based on the obtention of the extracellular matrix (ECM). The ECM consists of the isolated 3D scaffold that supports the cell lines, and there is evidence showing its participation in cell differentiation. It is also known that repopulation of ECM with stem cells is a potential step to the generation of functional organs in addition to a null antigenic response. **Objective.** To obtain a decellularized hepatic ECM from Wistar rats by anterograde perfusion and to evaluate its components. **Material and methods.** This was an experimental study, where the livers were removed from male Wistar rats weighing 400 g. The livers were exsanguinated and processed with anionic detergents through the portal system, until the liver ECM was obtained. Subsequently, the tissues were processed for staining and immunohistochemistry. **Results.** The technique used with anionic detergents allowed the obtention of a liver ECM free of cellular content, with the potential to be used for recellularization. **Conclusions.** The perfusion of anionic detergents through the hepatic portal system makes possible the obtention of a decellularized ECM. These results allow and facilitate further studies regarding organ cellular repopulation.

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128 CARTEL
THE ROLE OF MIR-149-3P ON THE MODULATION OF TGF-β RESPONSE PATHWAYS IN HEPATIC CELLS

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Background. TGF-β is one of the main factors that act in response to hepatic damage through its anti-proliferative and profibrotic activities, which can be regulated by several strategies which include post-transcriptional regulation mediated by miRNAs. In our laboratory, we previously determined that the expression level of has-miR-149-3p is modified after the exposure of Huh-7 cells to TGF-β so we are interested in studying the functional role of this miRNA in the modulation of the response induced by TGF-β. **Aims.** A) Study the effect of the miR-149-3p over the expression of TGF-β in hepatic cells. B) Characterize the expression levels of different cell regeneration and death markers promoted by TGF-β in cells in which miR-149-3p was inhibited. C) Determine the role of miR-149-3p in modulating the expression of different targets related to the cellular response to TGF-β. **Materials and methods.** The cellular response to the TGF-β stimuli mediated by miR-149-3p was determined by the transfection of miRNA inhibitors in Huh-7 cells. RT-qPCR assays were carried out to determine the relative abundance of the mRNA of TGF-β, markers of cell proliferation and death, as well as mediators of inflammation. Moreover, the amount of TGF-β in cell supernatants was determined by ELISA and apoptosis cell death was studied by Annexin V staining. Additionally, the miR-149-3p expression level was determined in Huh-7 cells stimulated with TGF-β. Finally, after the inhibition of the miR-149-3p, we measured by RT-qPCR the expression of two possible targets of his miRNA involved in the signaling pathway induced by TGF-β. **Results.** The miR-149-3p can modulate the levels of TGF-β, cell proliferation, and death markers as well as inflammatory mediators in Huh7 cells. We also found that TGF-β modulates the expression levels of miR-149-3p. Finally, we found that two molecules intimately related to the signaling pathway induced by TGF-β are also modulated by the miR-149-3p. **Conclusions.** Our results demonstrate that the miR-149-3p can trigger an antagonistic signal to the TGF-β stimuli to modulate the effects of this cytokine in hepatic cells.

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65 ORAL
THEORETICAL STRATEGY TO REVERT THE HEPATIC FIBROSIS USING AN ADMMP8 VECTOR ADMINISTERED IN MUSCLE

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Background. In previous works we described how the systemic use of the vector AdMMP8 reverts experimental hepatic fibrosis. The administration of the vector AdMMP8 in muscle, allows the expression of the protein for 21 days, targeting the liver and achieving an antifibrogenic effect. This strategy allows us to approach a clinical scenario by reducing the adverse effects of the vector. **Aim.** To establish therapeutic strategies to reduce hepatic fibrosis using AdMMP8 vectors administered in muscle. **Material and methods.** Muscle tissue was modified using Ad-GFP as a control and Ad-MMP8 as the therapeutic gene in an experimental model of hepatic fibrosis induced by thioacetamide (TAA). Kinetic study was performed sampling 1, 2 and 3 weeks after AdMMP8 administration. We analyzed the expression of GFP and MMP-8, measured the expression of different pro and anti-fribrogenic genes, and evaluated the percentage of hepatic fibrosis. **Results.** The amount of circulating and liver MMP8 was sustained during 21 days, fibrosis decreased by 48%, expression of profibrogenic genes decreased in Col alfa1 (I) 4 times, TGFbeta 3 times and CTGF 2 times, increased in antifibrogenic genes such as MMP-9 2.8 times and MMP-1 10 times. A clear decrease in the inflammatory infiltrating cells was observed in the treated animals compared to those of AdGFP. **Conclusions.** A dose of AdMMP8 of 3 x 10^{11} in the muscle is sufficient to obtain a stable 21-day expression of GFP and MMP-8. Degradation of collagen in the liver reduces pro-fibrogenic genes expression, restoring hepatic architecture. In our study, expression of MMP-8 protein in muscle, systemic releasing and hepatic activation leading to antifibrogenic activity, were demonstrated providing this model a potential antifibrogenic therapeutic strategy for liver damage.

73 CARTEL
COMPARISON OF THE EXPRESSION OF THE TRANSCRIPTION FACTORS FOXC1 AND SNAI1 IN THE HUH7 AND HUH7 REPLICON CELL LINES

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Introduction. It is known that hepatitis C virus (HCV) proteins are capable of inducing epithelial-mesenchymal transition (MET) in liver cells. This activation could be related to the oncogenic capacity of the virus and its profibrotic activity, in addition it has been suggested that it could favor the viral replication and the chronicity of the *in vivo* infection. **Objective.** To evaluate the expression of FoxC1 and Snai1, orchestrators of MET,

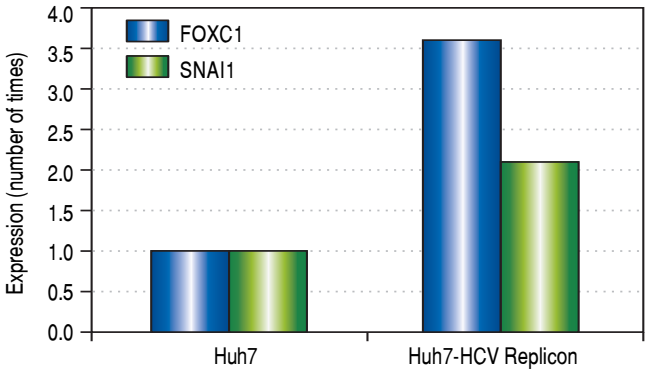

Figure 1 (I.73). *Expression of FoxC1 and Snai1 at the transcriptional level.*

in cells of human hepatocytes that express the non-structural proteins of HCV and control. **Materials and methods.** Two cell lines of hepatocarcinoma, Huh7 and Huh7-HCV Replicon, which expresses the non-structural proteins of HCV, were used. The expression FoxC1 and Snai1 were compared, in both cell lines, by RT qPCR and the expression of Snai1 through Western blot. The study was carried out in triplicate. **Results.** The expression at the transcriptional level of FoxC1 in the Huh7-VHC Replicon cell line was more than three times compared with the expression in Huh7 cells, whereas the expression of Snai1 was double (Figure 1). Paradoxically, the expression at the translational level of the Huh7-VHC Replicon cell line showed the silencing of Snai1. **Conclusion.** The Huh7-VHC Replicon cell line overexpresses FoxC1 and Snai1 at the transcriptional level, this could be due to the expression of HCV proteins, however the expression at the translational level of Snai1 is silenced. This may be due to adaptive mutations in the cell line that favor their survival and allow to maintain the replication system of viral proteins.

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06 CARTEL
CHARACTERIZATION OF A DIETILNITROSAMINE-INDUCED HEPATOCARCINOGENESIS MOUSE MODEL: A TOOL FOR THE STUDY OF THE SYNERGIC EFFECT OF DIFFERENT HEPATOTOXIC AGENTS

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Introduction/Aim. Even although the hepatocellular carcinoma (HCC) appears after a long exposition period to small

amounts of different etiological agents, it is the second most lethal cancer worldwide. In order to chronologically reproduce its progression, several experimental rodent models have been exposed to different hepatocarcinogenic agents such as diethylnitrosamine (DEN). However, these models have used very high carcinogenic DEN doses. The aim of this investigation was to develop an experimental model that closer reproduces the HCC as occurs in humans. Thus, we characterized an HCC experimental model by administering low DEN doses in mice that in parallel, allows us to determine the synergistic effect of hepatotoxic agents that humans are regularly exposed. **Material and methods.** C57BL/6 male mice were subjected to 2.5, 5, 10, 20 and 40 mg of DEN/kg body weight (2 doses/week, i.p.), during 6, 10, 14 and 18 weeks. Subsequently, we determine the effect of DEN on hepatocarcinogenesis markers, cell proliferation and apoptosis, DEN metabolism and oxidative damage, through histopathological analysis, western blot, immunohistochemistry, immunofluorescence and ELISA assays. **Results.** After 18 week, we found that the dose of 20 mg/kg induced the production of collagen fibers or fibrosis and the preneoplastic nodules appearance. Although the expression of the tumor marker Gstp1 and that of Cyp2e1, a DEN metabolizer enzyme, were induced by lower doses, they were decreased by 20 mg/kg; interestingly, their expressions were mainly located in the nodular areas. While the cell proliferation markers Ki67 and Pcna increased, procaspase-3, an inactive form of apoptosis, decreased its expression by carcinogenic treatment. These phenomena were associated to the increment of both reactive oxygen species and 4-hydroxynonenal adduct levels. **Conclusion.** Our results clearly indicate that the HCC experimental model induced by low DEN (20 mg/kg) doses, reproduces the HCC progression in mice and might be very useful both to study the disease chronology and to determine the synergistic effect of different hepatotoxic agents such as the ethanol, earlier and up to 18 weeks by administering even lower DEN doses.

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II. CIRRHOSIS AND ITS COMPLICATIONS

01 CARTEL
UNCONTROLLED GLYCEMIA IS RELATED TO ALL CAUSES OF MORTALITY AND CARDIOVASCULAR DEATH IN PATIENTS WITH CIRRHOSIS AND DIABETES

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Background and aim. Diabetes is a common comorbidity in patients with cirrhosis. The aim of this study was to investigate risk factors increasing all causes of mortality, with special attention on cardiovascular death in patients with cirrhosis with type 2 diabetes. **Material and methods.** A cohort study which included patients with cirrhosis and diabetes, followed-up for the last 10 years. We specially search for all causes of mortality and cardiovascular death. Univariate analysis was performed using t Student's test or Mann-Whitney U test, or with χ^2 or Fisher's exact test. Cox regression model was used for the multivariate analysis. Kaplan-Meier curves was constructed to compare between those death or alive. A $p < 0.001$ value was considered significant. **Results.** 380 patients with cirrhosis and diabetes were included, 193(50.8%) were men. The mean of age was 62.6 ± 9.0 year-old. Causes of cirrhosis were: alcohol 156 patients (41.1%), hepatitis C 76 (20.0%), non-alcoholic steatohepatitis 111(29.2%), cryptogenic 37(9.7%). According to Child-Pugh: 141 patients (37.1%) were assessed as A, 170(44.7%) B, 69(18.2%) C. Thirty three (8.7%) died for liver-related causes, 29(7.6%) died for cardiovascular death. Patients who died had higher fast serum glucose compared with those alive: 220 ± 85 mg/dL *vs.* 143 ± 62 mg/dL, $p < 0.0001$; and higher HbA1c serum levels: 8.4 ± 1.5% *vs.* 6.8 ± 1.1%, $p < 0.0001$. In the univariate analysis, hepatic encephalopathy (HE), ascites, spontaneous bacterial peritonitis (SBP), level of HbA1c > 8.0%, and decompensated cirrhosis (Child B/C) were factors associated with all causes of mortality ($p < 0.0001$). In the multivariate analysis, only HbA1c > 8.0% was associated with all causes of mortality (HR = 6.3; 95%CI = 3.2-12.6; $p < 0.0001$). When we analyzed specifically for cardiovascular death, those who died had higher serum glucose levels: 230 ± 92 mg/dL *vs.* 143 ± 62 mg/dL, $p < 0.0001$; and HbA1c serum levels: 8.8 ± 1.6% *vs.* 6.8 ± 1.1%, $p < 0.0001$. In the univariate analysis, ascites ($p = 0.001$), HE, SBP, level of HbA1c > 8.0% were associated with cardiovascular death ($p < 0.0001$). Decompensated liver disease, variceal bleeding, sex were not significant. In the multivariate analysis HbA1c > 8.0% was strongly associated with cardiovascular death (HR = 48.6; 95%CI = 10.6-222.4; $p < 0.0001$). **Conclusion.** When diabetes coexists with cirrhosis, uncontrolled glycaemia is the most important risk factor predicting all causes of mortality, but specially is strongly associated with cardiovascular death.

10 CARTEL
CLIF-SOFA OR CLIF-C-ACLF?, COMPARISON TO PREDICT MORTALITYAT 28 AND 90 DAYS IN MEXICAN PATIENTS WITH ACUTE ON CHRONIC LIVER FAILURE

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Introduction. Acute on chronic liver failure (ACLF) is a syndrome characterized by acute decompensation, multiorganic failure and high mortality-rate. CLIF-SOFA scale is an adaptation of SOFA traditional scale used in Intensive Care Unit, for cirrhotic patients. CLIF-C-ACLF was designed for obtaining more accuracy than CLIF-SOFA to predict mortality in cirrhotic patients, the main change, was to add age and leukocytes count into the equation. **Aim.** To evaluate the accuracy of CLIF-SOFA and CLIF-C-ACLF for predicting mortality at 28 and 90 days in patients with ACLF. **Material and methods.** A prospective, analytic study, the sample was integrated by cirrhotic patients who met ACLF criteria. **Results.** From October 2016 to July 2017, we included 174 patients; the mean age was 53.21 ± 12.22 year-old. The main cause

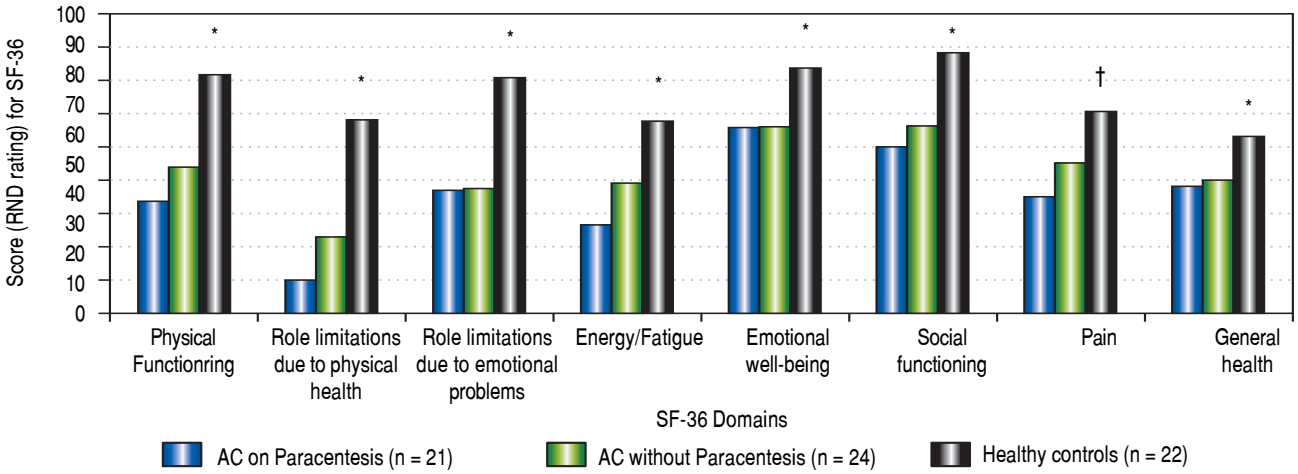

Figure 1 (II.19). *Quality of life in patients with ascites due to cirrhosis (AC) on and without parecentesis and healthy controls. * p < 0.05 vs. AC on and without paracentesis. † p < 0.05 vs. AC on paracentesis.*

of cirrhosis was alcohol intake in 53.4%. The main reasons for hospitalization were: encephalopathy 37.9%, tense ascites 28.7% and digestive tract bleeding 21.8%. The mean of leukocytes ($x10^9$) 13.09 ± 9.62, total bilirubin 10.29 ± 10.59 mg/dL, albumin 2.04 ± 0.52 g/dL, creatinine 2.61 ± 1.74 mg/dL, prothrombin time 22.93 ± 8.08 sec. The accuracy of the scales to predict 28-day mortality was: CLIF-SOFA, AUC 0.72, 95% CI = 0.65-0.80, cut-off value 12, sensitivity 61%, specificity 71%; CLIF-C-ACLF, AUC 0.64, 95% CI = 0.56-0.72, cut-off value 55, sensitivity 54% specificity 65%. The accuracy of both scales was similar to predict 90-day mortality. In logistic regression models taking 28-day and 90-day mortality as dependent variables, we did not find statistical significant association of age and leukocytes count to predict mortality. **Conclusions.** CLIF-SOFA was more accurate than CLIF-C-ACLF in our population to predict early mortality (28 days), the lower accuracy of CLIF-C-ACLF could be because there was not association between age and leukocytes count with mortality.

19 CARTEL
QUALITY OF LIFE IN CIRRHOTIC PATIENTS WITH ASCITES WITH OR WITHOUT PARACENTESIS AND COMPARED WITH HEALTHY CONTROLS

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Background and aim. Ascites is the most frequent descompensation of cirrhosis; the ascites treatment often need paracentesis, but its impact on quality of life is unknown. The aim was to evaluate the quality of life in cirrhotic patients with ascites with or without paracentesis need and to compare them with healthy controls. **Material and methods.** After obtaining the informed consent, we applied the questionnaire SF-36 to patients with ascites+paracentesis (n = 21), without paracentesis (n = 24) and healthy controls (n = 22). We also evaluate the body mass index (BMI), the MELD and Child Pugh. Data are expressed as mean ± SD, 95%CI and percentages. Unpaired Student t test 2 tails and χ^2. P = 0.05. **Results.** There was no difference in age [56.3 ± 12.2(51.1-61.5), 56.1 ± 16.1(46.1-66.1), 56.7 ± 10.4 (52.4-61.1)], sex (women: 52%, 54%, 55%), BMI [27.7 ± 5.8 (25.2-30.2), 28.4 ± 4.6 (26.5-30.4), 28.7 ± 4.7 (26.7-30.7)] or in MELD [16.8 ± 5.7 (14.2-19.4), 13 ± 6 (10.3-15.7), 0] of patients with ascites + paracentesis, without paracentesis or healthy controls, respectively. The patients with paracentesis had higher score in Child-Pugh scale (A: 5%, B: 25% y C: 70%) compared with patients without paracentesis (A: 29%, B: 53% y C: 18%, p = 0.004). Compared with healthy controls, the patients with cirrhosis and ascites showed decrease in 8 scales of the SF-36, independently of the paracentesis need, with exemption of the corporal pain domain, which showed significant deterioration in patients with paracentesis *vs.* healthy controls (Figure 1). **Conclusions.** These results show a low quality of life in patients with cirrhosis and ascites,with or without paracentesis need, compared with healthy controls. These findings warn the hepatologist the need to establish programs that improve the quality of life in this vulnerable population. This work has not been sponsored by any governmental or commercial system.

28 CARTEL
BRIDGE THERAPY USING SENGSTAKEN BLAKEMORE TUBE FOR ACTIVE VARICEAL HEMORRHAGE

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Background. Mortality due to upper variceal hemorrhage is estimated between 12 and 20% during an acute episode, if failure to control the hemorrhage, mortality increases up to 50%. The current treatment of variceal hemorrhage is liquid reanimation, blood transfusion if needed, vasoactive drugs and mechanical hemostasis using either endoscopic or balloon tamponade. The Sengstaken Blakemore tube has been used as an initial treatment or as a bridge therapy prior to endoscopic treatment, controlling up to 90% of cases of hemorrhage, however, its use has

decreased since the era of endoscopic ligation. **Aim.** To evaluate the current use of the Sengstaken Blakemore tube in patients with active variceal upper gastrointestinal bleeding. **Material and methods.** Retrospective, descriptive, observational study. We evaluated a 3-year period from January 2015 to December 2017. Patients with cirrhosis and upper gastrointestinal variceal bleeding that required Sengstaken Blakemore tube placement. **Results.** Thirty eight patients were included, 68% male gender, with cirrhosis (63% of alcoholic etiology) and with upper gastrointestinal variceal hemorrhage who required Sengstaken Blakemore tube placement if urgent endoscopy was not available, the use of vasopressor was 66% terlipressin, 34% octreotide; 16% were Child-Pugh A, 29% Child-Pugh B, 55% Child Pugh C. In 53% of the cases variceal ligation was performed (if large esophageal varices of Baveno). Regarding the associated complications, 29% of the patients presented hepatic encephalopathy, 34% acute renal failure, 13% urinary tract infection, 3% spontaneous bacterial peritonitis. With an intrahospital mortality of 18%. There was no mortality association with encephalopathy, acute renal failure, spontaneous bacterial peritonitis and urinary tract infection. **Conclusions.** The Sengstaken Blakemore tube continues to be useful in the management of patients with variceal upper digestive bleeding, its current value relies in those patients in which urgent endoscopic therapy is not available, hemodynamic instability and failed endoscopic therapy. The main cause of death in patients of our study was rebleeding. Prospective studies with a greater number of patients should be carried out.

34 CARTEL
DIASTOLIC DYSFUNCTION IN REDUCED 6 MINUTE WALK TEST DISTANCE IN CIRRHOTIC PATIENTS

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Background and aims. The Child-Pugh classification and the Model for End-Stage Liver Disease (MELD) scale are used to evaluate the prognosis of patients with cirrhosis, however they have known limitations. The 6 minute walk test (6MWT) is a simple and fast tool that gives useful prognostic information; Marquez (2017) showed in decompensated cirrhotic patients that a cut-off of ≤ 398 m in the 6MWT is associated with higher mortality. The cirrhotic cardiomyopathy (CC) is present almost in 50% of cirrhotic patients, it correlates with severity of the liver disease and is associated with worse outcomes. Diastolic dysfunction (DD) is an early manifestation of the CC, it is related with worse functional capacity and worse survival. **Aim.** To investigate the relationship between a reduced 6MWT distance and the presence of DD in cirrhotic patients with liver transplantation (LT) indication. **Material and methods.** It is a retrospective cohort study. Clinical data from cirrhotic patients followed in a LT evaluation consult were obtained; patients had to have an echocardiogram and a 6MWT between 2011 and 2016. **Results.** 205 patients were included with a median age of 50 + 11.8 years, 56.6% were women and had a follow-up of 15.3 ± 12.9 months. The main etiology of cirrhosis was hepatitis C (32.7%). The MELD score at the time of the 6MWT was 14.6 ± 4.2 and the mean distance on the 6MWT was 387 ± 77.7 m. We found 52 patients (25.4%) with DD by echocardiography, with less 6MWT distance than patients without DD (364.2 ± 75.1 m *vs.* 395.3 ± 77.2 m, p = 0.011) (Figure 1), there was more DD prevalence at greater severity of liver disease by Child-Pugh (Figure 2). In the follow-up, 45 patients died (22%), of which 13 patients (28%) had DD. These group of patients showed less 6MWT distance compared to those who remained alive at the end of their follow-up (362 + 58.1 *vs.* 394.65 + 81.1 m, p = 0.007). **Conclusions.** Patients with reduced 6MWT distance showed greater mortality and DD prevalence.

Conflict of interests: This study didn't had any sponsorship; the authors declare no conflict of interest.

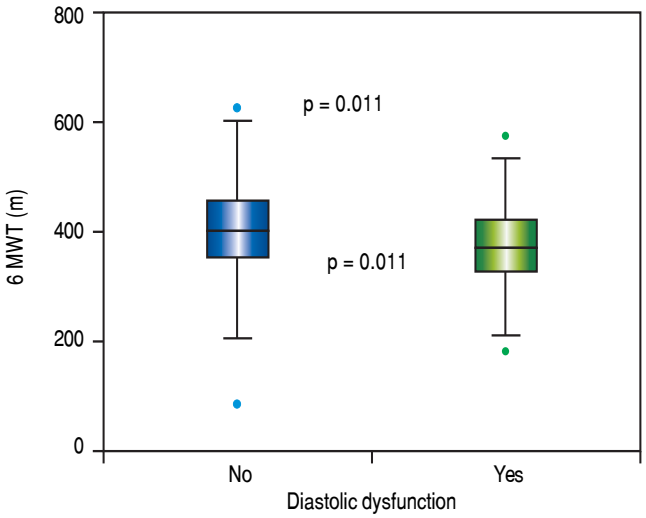

Figure 1 (II.34). Diastolic dysfunction.

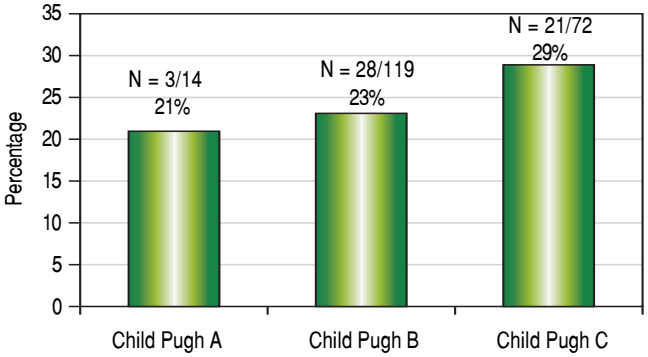

Figure 2 (II.34). *Diastolic disfunction.*

40 CARTEL
IMPACT OF INFECTIONS ON THE MORTALITY OF HOSPITALIZED PATIENTS WITH LIVER CIRRHOSIS

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Background and aim. Infections are common complications in patients with liver cirrhosis and are associated with poor prognosis. Currently, in our population, there are no studies that analyze the mortality risk of infectious complications related to prognosis scales in hospitalized cirrhotic patients. Our aim was to evaluate the impact of different infections on the mortality of hospitalized patients with cirrhosis. **Material and methods.** We performed a case-control study in patients with cirrhosis of 18-70 years-old who were hospitalized from March 1st, 2014 to August 1st, 2016 with a 1-year follow-up period. Patients with a history of cancer (except for hepatocellular carcinoma), treatment with immunosuppressant drugs, extrahepatic autoimmune diseases and human immunodeficiency virus infection were excluded. We recorded demographic data, prognostic scales (Child-Pugh and MELD), infections as defined in the clinical guidelines of the "Infectious Diseases Society of America" and death at the end of the follow-up period. For the demographic analysis, numbers and percentages were determined for qualitative variables, medians and interquartile ranges for the quantitative variables with abnormal distribution and for the contrast of hypotheses the χ^2 and Kruskal-Wallis tests were used as appropriate. For the analysis of mortality, we determined hazard ratios with 95% confidence intervals by Cox-regression analysis in univariate and multivariate models and for the contrast of hypotheses the χ^2 test was performed. **Results.** We detected 292 patients with a mean age of 57 years with a predominance of women (54.8%) and the predominant etiology was infection by the hepatitis C virus (34.6%). 188 patients presented infectious complications. A correlation was observed between the prognostic scales and the infectious complications. From the infected patients, 44.7% died and from the non-infected patients 8.7% died at the end of the follow-up period. In the univariate analysis the infections that increased the risk of mortality were spontaneous bacterial peritonitis (SBP) (HR 1.79, IC95% 1.10-2.93) and pneumonia (HR 5.11, IC95% 3.26-8.00) and in the multivariate analysis only pneumonia presented an increased risk of mortality (HR 5.2, IC95% 3.19-8.64). **Conclusions.** An increase in the risk of mortality at 1-year was observed in hospitalized patients with cirrhosis that presented SPB and pneumonia.

41 CARTEL
CIRRHOTIC CARDIOMYOPATHY IN HOSPITAL JUÁREZ DE MÉXICO

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Backgound and aim. Cirrhotic cardiomyopathy (CCM) is characterized by a contractile response capacity altered to stress and/or altered diastolic relaxation with electrophysiological abnormalities, in the absence of known cardiac disease and independently of the etiology of liver disease. The clinical consequence is an altered cardiac response that is initially evident only under stress conditions, which determines that it goes unnoticed with an underestimated prevalence. The objective of this study is to determine the frequency of CMC and its correlation with the Child Pugh scale. **Material and methods.** Analytical, observational, cross-sectional study in patients with hepatic cirrhosis (CH) of any etiology and without cardiopulmonary pathology of the Gastroenterology service of the Hospital Juárez de México carried out from April 2016 to February 2018. Their age, gender, heart rate, echocardiogram, electrocardiogram were analyzed. The stage of the disease was determined by means of the Child Pugh scale. **Results.** We included 52 patients, 16 women (30.76) and 36 men (69.23%), mean age 56.78 years, alcoholic etiology more frequent (31 = 59.61%). According to the Child Pugh classification, 24 patients = A (46.15%), 25 = B (48.07%), 3 = C (5.76%). Diastolic dysfunction (DD) was identified in 22 patients (42.30%), all with preserved LVEF and in 5 patients (9.61%) interatrial shunt was observed. A prolonged QTc was determined in 15 patients (28.84%). We classified 12 patients (23.07%) with CMC (Alcoholic 7 (58.33%), NASH 2 (16.66%), Autoimmune 3 (25%)) not correlating their presence with the Child Pugh stage ($p = 0.781$) or the presence of shunts ($p = 0.545$). There is a significant difference in the proportion of patients with shunts between stage A and B being higher in the latter ($p = 0.028$, OR 1.25 CI 1.028-1.521). **Conclusions.** CMC presented with a low frequency in patients with CH independently of its etiology, not showing a correlation with Child Pugh stage, which makes it necessary to search early in patients at risk of being subjected to stress due to the impact on their prognosis. The autors declare that does not exist an interest conflict.

42 CARTEL
VALUATION OF CONTROLLING NUTRITIONAL STATUS (CONUT) IN CIRRHOTIC PATIENTS AND MORTALITY AT 28 DAYS OF HJM (PRELIMINARY RESULTS)

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Introduction and objectives/Background and aim. In Latin America there are few studies that show the relationship of

mortality and nutritional status of patients with cirrhosis who enter hospitalization using the CONUT scale. The CONUT scale gives us a nutritional biochemical and immunological parameter of patients with a possibility of follow-up during their hospitalization and to denote which patients are at risk to develop malnutrition divided into normal, mild, moderate and severe. **Objective.** To determine the relationship of nutritional status and mortality to 28 days of cirrhotic patients hospitalized in gastroenterology of the Hospital Juárez de México. **Material and methods.** The design is non-experimental quantitative, transversal a correlational and prospective scope. The software used was spss version 24. Study carried out from September 2017 to January 2018 hospitalized in the Hospital Juárez de México. **Results.** 75 patients were included. Of which 59% (44) were male, 41% (31) female, the average age was 55.8 years. The most frequent diagnosis of admission was HTDA 45%, second place Hepatic encephalopathy 21.1% and urinary tract infection 9.3% and third place PBE 4.7%. The most frequent cause of hepatopathy was alcohol 44%, NASH 20%, in study 20%, HCV8%, Autoimmune 3%. Patients with mild malnutrition presented in 2.7%, moderate 40% and severe 57.3%. Patients with hepatic encephalopathy had a moderate to severe risk of malnutrition that statistically not significant at p = 0.56. 42.7% of patients had had an episode of previous admission. Of the patients who died within 28 days (8), they were 63% male and 37% were female with a p = 0.054. Mortality and severe malnutrition do not have a statistically significant relationship. Severe malnutrition occurred in 75% of patients who died and in 60% of those who did not die with p = 0.4. **Conclusions.** Patients with chronic liver disease have a degree of malnutrition since their admission, there was no patient with normal nutritional assessment. There was no correlation between severe malnutrition and mortality, the study should continue to complete the sample number.

45 CARTEL
DEMOGRAPHIC CHARACTERISTICS, ASSOCIATED AUTOIMMUNE DISEASES AND MORTALITY IN PATIENTS WITH PRIMARY BILIARY CIRRHOSIS (PBC) IN THE SPECIALTY HOSPITAL LA RAZA NATIONAL MEDICAL CENTER

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Introduction. CBP is a chronic inflammatory disease, autoimmune, characterized by cholestasis, serological activity to antimitochondrial antibodies and progressive destruction of the biliary epithelium. It presents variable course, with duration of decades from the initial injury until reaching cirrhosis. Estimated prevalence of 50 to 150 cases per million. More than 90% are women 50 years of age. It exhibits an extensive number of autoimmune manifestations such as: Sjogren's syndrome (75%), hypothyroidism (15 to 22%), Raynoud's phenomenon, among others. The estimated mortality is 5% to 9%. However, there are no studies in the Mexican population that describe these associations. **Objective.** To determine the demographic characteristics, associated comorbidities and mortality in the population with PBC of HECMNR in a period comprised in 2014-2018. **Material and methods.** Observational, descriptive, transversal and retrospective study. Clinical records of patients diagnosed with PBC were reviewed, according to international criteria, during the period from January 2014 to January 2018. Recording the following data: age, gender, laboratory studies and associated autoimmune and non-autoimmune comorbidities. **Results.** 95 patients were included, of whom 85 (89.47%) were women and 10 (10.52%) men, median age 45 years, median alkaline phosphatase was 189, gamaglutamyl transferase 140.1, BT 1.47 and platelets of 132,000, of the total number of patients, 55 (57.89%) with liver cirrhosis; main complication variceal hemorrhage present in 32 patients (33.68%); 19 patients (20%) with overlap syndrome (CBP/HAI), in terms of comor-

Table 1. (II.45)

Characteristics	Population (n = 95)
Gender (fem / masc)	10 (10.52%) / 85(89.47%)
Age (years) median	45 (19-71)
Hepatic cirrhosis (%)	55 (57.89%)
Child Pugh A	21 (22.10%)
Child Pugh B	13 (13.68%)
Child Pugh C	21 (22.10%)
Digestive hemorrhage (%)	32 (33.68%)
Ascitis (%)	29 (30.52%)
Hepatic encephalopathy (%)	12 (12.63%)
Esophagogastric varices (%)	48 (50.52%)
Small esophageal varices	23 (24.21%)
Large esophageal varices	24 (25.26%)
Gastric varices GOV1	7 (7.36%)
Gastric varices GOV2	6 (6.31%)
Gastric varices IGV1	2 (2.10%)
Gastric varices IGV2	1 (1.05%)
Alkaline phosphatase (UI/L) median	189 (9.8-1295)
GGT (UI/L) median	140.1 (15.5-1353.3)
BT (mg/dL) median	1.47 (0.34-20.75)
Platelets (U/mcl) median	132,000 (28,000-344,000)

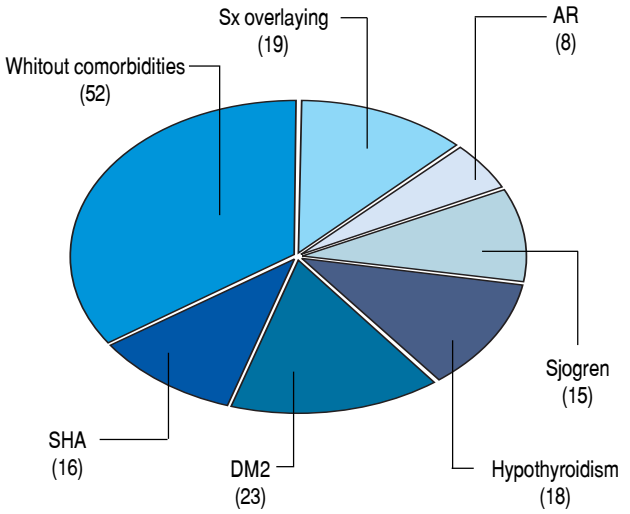

Figure 1 (II.45). *Comorbidities in patients with PBC.*

bidities the most frequent was DM2 (24.2%), followed by hypothyroidism (18.94%), SAH (16.84%), Sjogren's syndrome (15.78%) and the AR (8.42%). Mortality was 7.6%. **Conclusions.** There is great association of PBC with autoimmune and non-autoimmune comorbidities, being the most frequent Sjogren syndrome and hypothyroidism, nevertheless in our study we found a greater prevalence of metabolic diseases like diabetes mellitus and arterial hypertension which accelerate liver damage. Mortality was similar to that described in other populations.

46 CARTEL
IMPAIRMENT OF MYOKINES EXPRESSION IN PATIENTS WITH CIRRHOSIS AND ITS MODULATION THROUGH PHYSICAL EXERCISE

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Background. Malnutrition is a frequent complication of cirrhosis and is associated to poor clinical outcomes, skeletal muscle depletion is one of its most common features. Skeletal muscle growth is restricted by myostatin which in turn is inhibited by follistatin, therefore, any intervention aimed to improve this pathway and consequently muscle mass could be of great benefit in cirrhosis. Among these interventions, physical exercise is the most logical approach, however there is no data showing the change on myokines after exercise in this population. **Aim.** To evaluate the behavior of myokines in patients with cirrhosis and their response to physical exercise. **Material and methods.** This study was conducted in the Department of Gastroenterology at INCMNSZ and involved two phases. Phase 1 included a cross-sectional evaluation of 122 cirrhotic patients that underwent nutritional assessment as well as determination of plasmatic levels of myostatin and follistatin. Phase 2 was a randomized open-label study in 16 cirrhotic patients undergoing physical exercise with a duration of 16 weeks, each patient underwent a baseline and final cardiopulmonary exercise test (CPET), draw of blood samples (pre, post, 2, 4 and 6 h after the CPET) and gene expression was done with real-time PCR. For statistical analysis areas under the curve (AUC) were constructed for myostatin expression, and compared their change intra and inter-group (β-actin and GAPDH were used to normalize gene expression.) A p value < 0.05 was considered significant. **Results.** In the 122 cirrhotic patients, there was a step-wise increase in myostatin levels as disease severity increased, and the opposite effect was seen in follistatin levels (Table 1). A further analysis showed a correlation between nutritional markers (Bioimpedance derived Phase angle) and myostatin levels. Finally, as a proof of concept, the effect of exercise on the myostatin expression was investigated, showing a marked exercise-induced decrease in its expression (Table 2). **Conclusion.** Myokine levels are altered in advanced stages of cirrhosis and correlate with malnutrition. The deleterious effect of myostatin can be abrogated by physical exercise in this population. This supports an early inclussion of an exercise intervention in patients with cirrhosis.

Table 1 (II.46). Myokine plasmatic levels in 122 patients from Phase 1 of the study.

	Child A (n = 44)	Child B (n = 39)	Child C (n = 39)
Myostatin (µg/L)	5168.1±2035.8	5013.8 ±2717.1	2344.7 ± 1600.5
Follistatin (µg/L)	569.2±366.2	1169.3 ±761.8	1440.2 ± 627.3

52 CARTEL
LIMITATIONS OF HAND-GRIP STRENGTH FOR MUSCLE FUNCTION ASSESSMENT IN PATIENTS WITH CIRRHOSIS

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Background. One of the main methods for functional assessment of the muscle is handgrip strength (HGS) that measures the strength placed on an object (dynamometer). The main limitation of this test is that it requires the active involvement of the patient therefore the presence of hepatic encephalopathy and the severity of the disease could directly bias the result making it unreliable. **Aim.** To evaluate the association between hand-grip strength and the severity of the disease as well as its prognostic implication. **Material and methods.** Cohort study 24 months of duration that included inpatients and outpatients from the Department of Gastroenterology at INCMNSZ. Nutritional, clinical and biochemical assessment was made. For statistical analysis Kolmogorov-Smirnov, descriptive statistics, T Student and χ^2 test, Pearson correlation and Cox Regression analysis were used. **Results.** 149 patients with cirrhosis were included, 67% were female and 33% male, the mean age was 54 ± 14 years, the main etiology was Hepatitis C virus (33.5%), 38.9% of patients were Child A, 32.2% Child B and 28.8% Child C, mean MELD was 12.5 ± 6.1. Mean HGS was 14.9 ± 8.9, in males it was 20.9 ± 10.9 and in females 12.2 ± 6.1. Fig-

Table 2 (II.46). Gene expression before and after the exercise intervention from phase 2 of the study.

	Exercise (n = 7)					Control (n=9)				
Gene	AUC basal	AUC final	Δexercise	Improvment %	p value	AUC basal	AUC final	Δcontrol	Improvment%	p value
Myostatin	8.1271	1.2664	-6.8607	-86%	0.028	3.7239	5.805	2.8011	64.80%	0.161

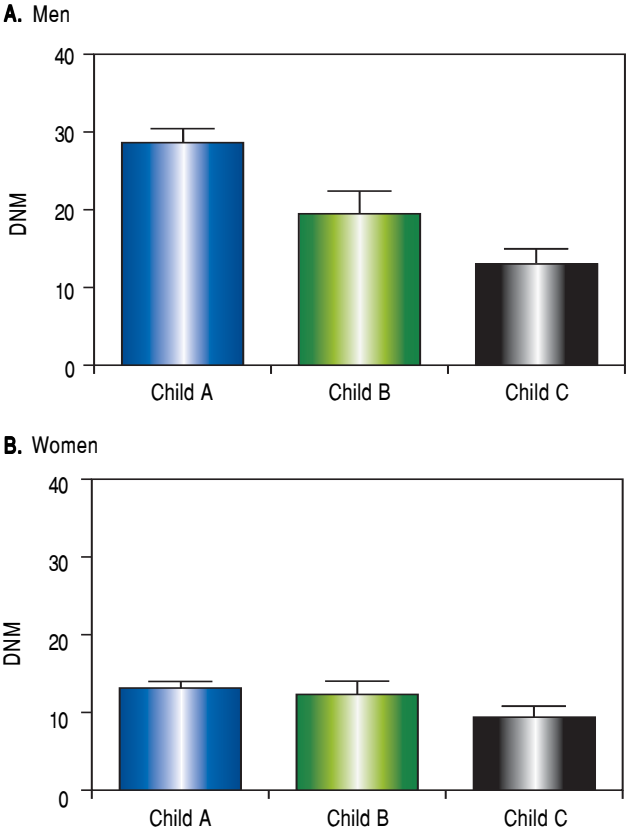

Figure 1 (II.52).

ure 1 shows the association between the severity of the disease and HGS, in males a clear association was found evidenced by a progressive decline of muscle function as the disease progressed, while females showed no significant difference. To further support this associations, correlations were calculated, in males significant strong negative correlations was found between HGS and Child-Pugh and MELD scores being -0.619 and -0.508 respectively, while in females there was no correlation with severity scales (0.014 Child-Pugh and -0.060 MELD. Finally, a Cox regression analysis was performed to evaluate whether there was prognostic association between nutritional diagnosis by HGS and clinical outcomes such as hospitalizations and mortality. The diagnosis of malnutrition by HGS when compared to the group without malnutrition showed a tendency in the prediction of the first hospitalization ($p = 0.07$), but was not able to predict mortality ($p = 0.69$). **Conclusion.** Hand-grip strength showed a clinical association only in male patients. The nutritional diagnosis did not have a significant prognostic value for hospitalizations or mortality.

69 ORAL
CORRELATION OF PLATELET COUNT/SPLEEN DIAMETER RATIO WITH ENDOSCOPIC FINDINGS IN CIRRHOTIC PATIENTS WITH PORTAL HYPERTENSION

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Background and aims. Portal hypertension is the most common major complication of cirrhosis, which results in the development of esophageal varices, portal hypertensive gastropathy and gastric varices. These complications contribute significantly to increased mortality due to the increased risk of upper gastrointestinal bleeding. Therefore, endoscopy is the primary modality for accurate diagnosis and treatment. However, this procedure is actually invasive and expensive which is why a non-invasive diagnostic tool is required. The aim of the present study was to assess whether the platelet count/spleen diameter ratio can predict the presence of portal hypertensive gastropathy, esophageal and gastric varices. **Material and methods.** We performed a cross sectional study with 420 subjects at Medica Sur Hospital from January 2010 to December 2016. In a prospective way, we obtained clinical and laboratory data as well as platelet count/spleen diameter ratio. Findings were assessed by 2 endoscopists. ROC curves were performed to assess diagnostic accuracy. **Results.** The mean age (± / -SD) of our population was 67.1 ± 6 years with a mean MELD score of 15 ± 4. 48% of our population sample was men. Table 1 shows the distribution of the endoscopic findings. Platelet count/spleen diameter ratio demonstrated a high diagnostic accuracy for esophageal varices;

Table 1 (II.69). Main endoscopic findings in patients with liver cirrhosis.

Variable	Percentage (%)
Esophageal varices	80
Global portal hypertensive gastropathy	44
Mild portal hypertensive gastropathy	41
Moderate-severe portal hypertensive gastropathy	46
Gastroesophageal varices 1	6
Gastroesophageal varices 2	6
Isolated gastric varices 1	2
Gastric antral vascular ectasia	9
Ulcers	7
Telangiectasias	4
Inflammatory pseudopolyps	9

Table 2 (II.69). Diagnostic accuracy of platelet count / spleen diameter ratio for complications of portal hypertension.

Variable	Sensitivity (%)	Specificity (%)	Area under the curve
Esophageal varices	92.3	95.5	0.99
Gastroesophageal varices 1	77.8	34.3	0.62
Gastroesophageal varices 2	66.7	32.5	0.61
Isolated gastric varices 1	100	33.2	0.71
Portal hypertensive gastropathy	70.4	37.4	0.58

however, it is less useful in predicting the presence of gastric varices and portal hypertensive gastropathy (Table 2). **Conclusions.** The platelet count / spleen diameter radio is a good diagnostic non-invasive alternative with high accuracy to predict the risk of esophageal varices development. This tool can be applied to choose correctly the candidates for endoscopic evaluation and treatment. This instrument is less helpful to diagnosis other complications of portal hypertension.

57 CARTEL
BACTERIAL RESISTANCE AND CAUSAL AGENTS IN CIRRHOTIC PATIENTS WITH URINARY TRACT INFECTION (UTI)

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Introduction. The UTI represents approximately one third of bacterial infections in decompensated cirrhotic patients, with a prevalence of 13-43%, which requires early recognition and specific therapeutic care, since an increase in bacterial resistance has been observed. **Objective.** To determine bacterial resistance and causal agents in cirrhotic patients with UTI. **Material and methods.** Retrospective, descriptive, cross-sectional study, performed in cirrhotic patients with urine culture test (+), during the period of January 2014 to December 2017, in which we analyzed: age, gender, etiology of cirrhosis, comorbidities, infectious agent, bacterial resistance, prognostic scales (MELD-Na, Child Pugh). The analysis of the results was carried out by means of descriptive and differential statistics, using the SPSS V.24 program. **Results.** 60 patients were studied, 41 (68.3%) were female. The average age of the total patients was 54.5 ± 12.8 years. The comorbidities most frequently reported: diabetes mellitus type 2 in 13 (21.7%), HT 11 (18.3%), Diabetes/HBP in 9 (15%), Spontaneous Bacterial Peritonitis (SBP) 3 (5%), hypothyroidism 2 (3.2%) and 12 patients (20%) without comorbidities. The etiology of Cirrhosis was alcohol in 22 (36.7%) patients, NASH/Cryptogenic 18 (30%), autoimmune 10 (16.7%), hepatitis C virus 8 (13.3%). The most frequently isolated infectious agent: *Escherichia Coli* ESBL (+) in 35 (58.3%) of the patients, sensitive *E. Coli* in 12 (26.7%), *Enterococcus Faecalis* in 6 (10%) and *Klebsiella pneumoniae* in 5 (8.3%). 73.4% of the bacteria were multidrug-resistant (MDR), being only 26.6% drug-sensitive. The majority of patients presented a Child-Pugh classification of C 32 (53.3%), Child B 26 (43.3%) and Child A 2 (3.3%). The average MELD-NA in these patients was 21 pts, with a minimum of 13 and a maximum of 38 pts. Mortality was evidenced in 5 patients (8.3%) of which 4 were MDR and 55 patients (91.7%) with satisfactory evolution. **Conclusion.** In our patients, the most frequent pathogen was multiresistant *E. coli*, which was mostly sensitive to aminoglycosides and carbapenems, demonstrating significant sensitivity to fosfomycin trometamol, being an alternative for these patients. The majority of patients are women with decompensated Child Pugh C cirrhosis, with alcohol etiology, with concomitant type 2 DM.
Conflict of Interest: None declared.

64 CARTEL
IMPORTANCE OF THE IDENTIFICATION OF 25 HYDROXY VITAMIN D3 AND ERLY INTERVENTION IN PATIENTS WITH CHRONIC LIVER DISEASE WITH OR WITHOUT CIRRHOSIS AND LIVER TRANSPLANT

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Background and aims. Vitamin D3 (VD3) is a hormone regulator of calcium and bone metabolism. **Aim.** To evaluate levels of 25-hidroxyvitamin D 25(OH)D, as well as lumbar and hip bone mineral density in patients with chronic liver disease and liver transplant, as well as their changes with treatment. **Material and methods.** 59 patients were seen at the Liver Unit between 2005 and 2017 with chronic liver disease (CLD) and liver transplant (LT) were included, mean age was 63 ± 7 with dose of vitamin D3 from 1,000 to 5,000 U qd. Bone mineral density and levels of 25(OH)D, were measured at baseline and after treatment. Group 1: patients with CLD without cirrhosis. Group 2: patients with cirrhosis, and Group 3: patients with LT, who received tacrolimus or sirolimus with mycophenolate as immunosuppressor treatment. Other treatments were alendronic acid, ibandronic acid, zolendronic or denosumab. **Results.** Patients with deficient levels (< 20 ng/mL) of 25(OH)D, improved to optimal levels in the 3 groups studied. However, patients with insufficient levels (20-30 ng/mL) only group 1 exhibited improvement to optimal levels. Bone mineral density studies showed an improvement in hip osteopenia only in group 3. Osteoporosis remained without change in spite of treatment in all three groups (Table 1). But there is a tendency to improve it. **Conclusion.** Early intervention with vitamin D3 treatment resolved deficient levels in patients with CLD with or without cirrhosis and in patients with liver transplant. Group 2 without cirrhosis had improvement in 25(OH)D in all the pa-

Table 1 (II.64). Levels of vitamin D in patients with chronic liver deseases and liver transplant.

Groups (n=21/16/22)	G1		G2		G3	
25(OH)D	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up
Deficient (< 20 ng/mL) (n = 4/8/7)	15.5±4.3	39.8 ±12.9*	14.8±3.1	33.5±7.8*	12.9±2.4	33.8±16.6*
Insufficient (20-30 ng/mL) (n = 4/4/3)	25.1±1.4	38.3 ±11.8*	24.8±3.4	41.3±7.4	27.4±3.1	30.9±3.5
Optimum (> 30 ng/mL) (n = 13/4/12)	36.2±3.7	31.8 ±9.4	40.0±8.9	37.2±14.3*	44.6±13.5	40.9±12.3

* p < 0.05, baseline and follow-up.

tients. Hip osteopenia only improved in patients with liver transplant. Osteoporosis remained the same in all groups.
Conflict of interest. This work has been totally subsidized by own resources.

78 CARTEL
RED BLOOD CELL DISTRIBUTION WIDTH AS MORTALITY MARKER AND HOSPITAL RE-ENTRY IN PATIENTS WITH DECOMPENSATED HEPATIC CIRRHOSIS FROM THE HOSPITAL JUÁREZ DE MÉXICO

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Introduction and objectives. The red blood cell distribution width (RDW) is a value that gives us information about the heterogeneity in the size of erythrocytes. Its elevation > 15.4% has been found as a prognostic factor for mortality in patients with heart failure. The mechanisms involved are nutritional deficiencies, chronic inflammation, etc.; is a frequent alteration in cirrhotic patients. The objective is to compare mortality and readmissions of patients with normal versus increased RDW to 3 months. **Material and methods.** This is a cohort of patients with decompensated hepatic cirrhosis, from the Hospital Juárez de México attended from March to November 2017. The RDW was measured at admission, and the presence of death or readmission due to decompensation was considered as an outcome in the next 90 days. Initially, the RDW increased (≥ 15.4%) and normal (< 15.4%) was compared with the baseline characteristics, later against the presence of readmission and death (test χ^2). Finally, through a multiple logistic regression, the risk of readmission due to elevated RDW was adjusted with the baseline characteristics. The statistical program SPSS version 22 was used and a $p < 0.05$ was considered statistically significant. **Results.** A total of 74 patients were included, 46 (62.2%) men, with a mean age of 56.9 ± 11.3 years. 19 patients (46.3%) re-entered in the RDW group increased against 8 patients (24.2%) in the normal RDW group (P value 0.042). Eight patients (19.5%) died in the RDW group increased against 4 (12.1%) in the normal RDW group (P value 0.297). The risk of readmission at 3 months adjusted for age and sex in patients with RDW ≥ 15.4 was OR 2.97 (95% CI 1.04-8.48, with a P value of 0.041), and adjusted for variceal bleeding OR 2.92 (95% CI 1.02- 8.40, with a value of P 0.046). **Conclusions.** There was a greater frequency of re-admissions due to decompensation at 3 months in patients with increased RDW, even adjusted with age and sex, as well as variceal hemorrhage. RDW can serve as a rapid method of screening for risk in patients with liver cirrhosis.
Conflict of interests. Authors declare not to have any interest conflicts.

79 CARTEL
EFFECT OF PHYSICAL EXERCISE IN PATIENTS WITH CIRRHOSIS ON THE EXPRESSION OF GENES INVOLVED IN AMMONIA METABOLISM

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Background. Ammonia plays a central role in the pathophysiology of hepatic encephalopathy (HE), some of the genes involved in its metabolism include glutamine synthetase (GLUL), glutaminase (GLS) and glutamate dehydrogenase (GDH). GLUL and GDH can metabolize ammonia towards a non-toxic compound, whereas GLS plays an essential role converting glutamine to glutamate and ammonia. Ammonia is mainly cleared by four organs: brain, kidney, liver and muscle, some studies have shown an increase in GLUL after exercise in healthy population, suggesting a muscle-induced expression; however no data in cirrhosis are available. **Aim.** To evaluate the changes on gene expression involved in ammonia metabolism in cirrhotic patients undergoing physical exercise. **Material and methods.** Randomized open-label study in cirrhotic patients during 16 weeks. Each patient underwent a baseline and final cardiopulmonary exercise test (CPET), draw of blood samples (pre, post, 2, 4 and 6 hours after the CPET). Plasma levels of ammonia were determined through enzymatic assay and gene

Table 1 (II.79).

GEN	AUC	AUC baseline	Exercise (n = 7) Δ exercise final	Improvement	value of P
Glutamate dehydrogenase	2.2914	0.4821	-1.8093	-28.51%	0.128
Glutaminase	2.0836	0.2386	-1.845	-70.37%	0.128
Glutamine synthetase	2.1743	1.3193	-0.325	-58.97%	0.463
Ammonia (mmol/L)	492.4286	478.0143	-14.4143	0%	0.6
GEN	**AUC**	**AUC baseline**	**Control (n = 9) Δ control final**	**Improvement**	**value of P**
Glutamate dehydrogenase	0.8478	0.3689	-0.4789	-49.66%	0.722
Glutaminase	1.4538	0.7878	-0.5816	-68%	0.817
Glutamine synthetase	2.1117	1.5294	-0.8463	-38.99%	0.401
NH3 (mmol/L)	481.48	472.8239	-8.6561	3.70%	0.953

expression was done with real-time PCR. For statistical analysis areas under the curve (AUC) were constructor for ammonia as well as GLUL, GLS and GDH expression, and compared their change intra and internet-group (β-actin and GAPDH were used to normalize gene expression). A p value < 0.05 was considered significant. **Results.** Sixteen patients (9 in the control group) were included, median age was 51.5 (42.2-55.7) years and the most frequent etiologies were HCV: 31.2%, and NASH: 25%. Severity according to Child-Pugh was: A 62.5% or B: 37.5%. Table 1 shows the changes in ammonia levels as well as in RNA expression. A further stratification was made in those patients that showed a decrease (responders) in ammonia levels (delta) compared to those who did not, where the analysis showed an over-expression in GLS only in those with increased ammonia levels, irrespective of the intervention (non-responders 41.24% (-79.5 to 427.0) *vs.* responders -85.2% (-92.9 to -51.9), p = 0.018). **Conclusion.** Physical exercise improves the expression of genes related to ammonia metabolism in patients with cirrhosis, however, the stronger effect seems to be given by the inherent gene expression.

81 CARTEL
EVALUATION OF LYSOSOMAL ACID LIPASE ACTIVITY IN CIRRHOTIC PATIENTS FROM DIFFERENT ETIOLOGIES AFTER LIVER TRANSPLANTATION

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Background and aim. Lysosomal acid lipase (LAL) is an enzyme that participates in the lysosomal digestion of lipids. The activity of this enzyme is decreased in patients with liver cirrhosis due to non-alcoholic fatty liver disease (NAFLD). The objective of this study was to evaluate the activity levels of LAL in cirrhotic patients from different etiologies after liver transplantation. **Material and methods.** We performed an observational, analytical and transversal study. We included adult patients from both sexes aged between 18 and 80 years old who were receptors of liver transplant during the period from December 2014 to December 2015. Demographic data and the etiology of cirrhosis were recorded. The enzymatic activity of the LAL was determined in dry blood samples of the patients in the period after the liver transplant. The demographic data are presented as numbers with percentages and measures of central tendency with dispersion measures as appropriate. To compare the activity of the LAL between the different etiologies, the one-way ANOVA and Student's t tests were performed as appropriate. A p < 0.05 was considered statistically significant. **Results.** LAL determinations were obtained in 74 transplant patients. The median of age was 57 years, the predominant gender was male (58%) and the most frequent etiology was infection by the hepatitis C virus (44%). The levels of enzymatic activity were different among the different etiologies of cirrhosis in the period after liver transplant (p = 0.015). The activity levels of LAL were lower in the groups with NAFLD (97 pmol/h/sample) and alcoholic cirrhosis (102 pmol/h/sample) and also when comparing the levels of enzymatic activity of these etiologies in an individual way whit the other etiologies, a statistically significant difference was observed in both in the group with NAFLD (p = 0.035) and in the group with alcoholic cirrhosis (p = 0.040). **Conclusions.** The activity levels of LAL are different among patients with cirrhosis due to different etiologies after liver transplantation, being lower in patients with prior NAFLD and liver cirrhosis.

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82 CARTEL
POTENTIAL USE OF URSOLIC ACID TO PREVENT FATTY LIVER DISEASE IN AN *IN VIVO* MODEL OF DIET-INDUCED OBESITY

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Background. Non-alcoholic fatty liver disease (NAFLD) is strongly associated with adipose tissue accumulation, high level of circulating triacylglycerides, insulin resistance and a proinflammatory profile. Ursolic acid (UA) is a pentacyclic triterpenoid naturally occurring in the plant kingdom, exhibiting widely evidenced antiinflammatory activity. **Aim.** To demonstrate the effect of UA over total adiposity, lipid profile, insulin resistance and proinflammatory citokines expression in an in vivo model of diet-induced obesity. **Material and methods.** Male Wistar rats 7 weeks of age, weighing 181.6 ± 9.3 g, fed with a high-fat diet (HFD) were employed. Four groups were studied: Control, receiving standard diet (8.12% lipids); obese, receiving HFD (45% lipids); AU-Prevention, receiving 50 mg/kg/day UA together with HFD during 9 weeks; and AU-revertion, receiving only HFD during 6 weeks, and 3 additional weeks HFD together with 50 mg/kg/day UA). Total adipose tissue was collected, metabolic markers were measured by ELISA, and expression of proinfammatory cytokines by qPCR. Determinations were carried out after 3, 6 and 9 weeks of treatment in independant groups. Data were analyzed by Kruskall Wallis and Mann-Whitney tests. **Results.** UA treatment significantly (p < 0.05) decreased total adiposity, triacylglicerides, cholesterol, insulin resistance and adipose tissue expression of TNF-α, MCP-1, IL-1β e IL-6. **Conclusions.** The metabolic benefits exhibited by UA renders this molecule as a promising therapeutic source with potential use in the treatment of NAFLD.

87 CARTEL
CLINICAL CHARACTERISTICS AND OUTCOMES OF PNEUMONIA IN PATIENTS WITH SEVERE COMORBIDITIES: IMPACT ON LIVER CIRRHOSIS

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Background and aim. Pneumonia is a common condition with a high morbimortality. The impact of pneumonia on liver cirrhosis (LC) has been scarcely described. We aimed to explore the clinical characteristics and outcomes of pneumonia in pa-

tients with LC compared to other comorbidities. **Material and methods.** Retrospective study with a cohort of patients admitted from 2014 to 2016 in two reference centers with a diagnosis of pneumonia and LC, with a control group of patients with pneumonia and another non-LC severe comorbidity. Clinical variables, laboratory data and outcomes were collected. Severe pneumonia was defined as that requiring mechanical ventilation or vasopressor support. **Results.** We included 55 cirrhotic patients and 165 controls. The LC group was younger, with 62 (Standard deviation [SD] ± 15.4) *vs*. 75 years (SD ± 12.2). At admission, the control group had more frequently oxygen saturation < 90% (73% *vs.* 47%, p = 0.001) and higher levels of C-reactive protein (median 9.7 *vs*. 4.2 mg/L, p = 0.001). The LC group had higher levels of procalcitonin [median 0.17 *vs.* 0.45 ng/mL (p = 0.02)]. The most frequently isolated etiological agents included *S. aureus* (16% methicillin-resistant [MRSA]) and *P. aeruginosa* (50% multidrug-resistant) in controls and *S. aureus* (50% MRSA) in LC. In the CH group there was a higher frequency of severe pneumonia (37% *vs*. 17%, [p = 0.001]), higher SMART-COP score with 3 (2-4) *vs*. 2 points (interquartile range [RIQ] 1-3, p = 0.042), longer hospital stays (11 [RIQ 6-16] *vs*. 6 days [RIQ 5-10], p = 0.0004), shorter survival time (33 [RIQ 23-79] *vs*. 41 days [RIQ 15-60], p = 0.08) and higher overall mortality (30% *vs*. 11%, p = 0.001). In the multivariate analysis, severe pneumonia was the only independent risk factor associated with overall mortality (Risk Ratio [HR] = 5.7, Confidence Interval 95% 1.7-18.6, p = 0.03). **Conclusions.** Pneumonia in patients with LC was associated with a more severe course, longer hospital stays and higher overall mortality than those with other comorbidities, underscoring the high susceptibility which LC confers.

The authors declare that there is no conflict of interest.

89 CARTEL
EFFECT OF RELATIVE SUPRARRENAL INSUFFICIENCY IN THE MORTALITY OF HOSPITALIZED CIRRHOTIC PATIENTS OF HOSPITAL JUÁREZ DE MÉXICO: CASES CONTROL

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Background. Relative adrenal insufficiency (RAI) has an incidence of 49%-69% and also has an impact on mortality and complications according to various reviews of the literature. Systematic studies find that critical or septic cirrhotic patients with RAI have a higher mortality and worse evolution. The method we used for the diagnosis of ISR was the determination of plasma cortisol levels less than 15 mcg/dL. **Aim.** To demonstrate that RAI has an effect on the mortality of hospitalized decompensated cirrhotic patients. **Material and methods.** Patients with decompensated hepatic cirrhosis of any etiology in the Gastroenterology Service at the Hospital Juárez de México from June 2017 to December 2017. The series group were: decompensated cirrhotic patients without RAI. The group of cases were cirrhotic patients with RAI. All of them underwent plasma cortisol from 7 to 9 in the morning and according to their value correlate with mortality. Type of study: Prospective study of case controls. Independent variable: Mortality. Dependent variable: Patients with RAI. Statistical analysis: χ^2 for nonparametric variables and Student t for parametric variables, considering $p < 0.05$ as statistically significant. **Results.** Incidence of RAI was 44% and mortality in patients with ISR was statistically significant with p: 0.002, the rest of the associations were not statistically significant (Table 1). **Conclusion.** The incidence of RAI was 44%. In our study, patients with RAI probably have a higher risk of mortality, however larger patient samples and multicentric studies are needed to validate this. Therefore, in the future, cortisol could be a tool to predict mortality in cirrhotic patients.

Conflict of Interest: None.

Table 1 (II.89). Demographic characteristic of patients with relative adrenal insufficienal.

Characteristics	With Relative adrenal insufficiency	Without Relative adrenal insufficiency	P
Patients	29	38	
Men	19	17	N/S
Women	10	21	N/S
Age	54.65	57.1	N/S
MELD NA	20.3	19.76	N/S
Child Pugh			
A	4	5	N/S
B	10	19	N/S
C	15	15	N/S
Albumine	2.3	2.4	N/S
Cortisol	11	23.7	**0.03**
High density lipoproteins	22.4	30.6	
Intra-hospital mortality	16	5	**0.002**
> 2 comorbidities	11	11	0.4
< 2 comorbidities	18	27	0.4

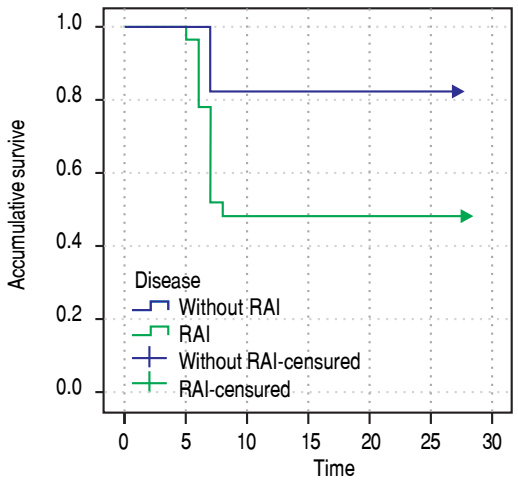

Figure 1 (II.89). *Survive functions. Kaplan Meir survive curve.*

90 CARTEL
TERLIPRESSIN FOR 24 H AS AN ADJUVANT THERAPY IN ACUTE VARICEAL BLEEDING: COMPARISON AGAINST A HISTORIC

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Background. Gastrointestinal bleeding by esophageal varices (EV) is one of the most frequent complications in patients with compensated and decompensated cirrhosis. The consensus of BAVENO VI suggests that the standard treatment is endoscopy with variceal ligation (VL) pluss vasopressors 1 (terlipressin) for 5 days. Several studies in 2012 suggest that administration of terlipresin for 24 h to 72 h post-VL gives a similar result to 5 days. Recently the portal hypertension consensus of 2017 suggests administering terlipressin from 2 to 5 days after VL. **Aim.** To demonstrate that the use of terlypressin 24 h after VL is same efficient that 3 and 5 days. **Material and methods.** Patients with gastrointestinal bleeding by EV hospitalized in the Gastroenterology Service at the Hospital Juárez de México from March 2016 to March 2017 as historical and March 2017 to December 2017 as a case study. The historical groups were: terlipresin at a for 5 days (2 mg in initial dose and 2 mg every 4 h for 5 days), terlipressin for 3 days (2 mg in initial dose and 1 mg each 6 h for 3 days). The group of cases terlipressin administered for 24 h (2 mg initial dose, 1 mg every 6 h for 24 h) all received antibiotic treatment, crystalloids and VL before 24 h. Type of study: Case study and historical controls. Variable independent: Bleeding variceal and cost. Dependent variable: Days of terlipressin. Statistical analysis: χ^2 for non parametric variables and student t for parametric variables, considering $p < 0.05$ as statistically significant. **Results.** The rebleeding in none of the groups compared was statistically significant: the cost in all the compared groups is statically significant. **Conclusion.** Terlipressin for 24 h as adjuvant therapy is same efficient that for 3 and 5 days, with significant financial savings for the patient.
Conflict of interest: None.

100 CARTEL
INFECTIOUS COMPLICATIONS AND MICROBIOLOGICAL ISOLATES IN HOSPITALIZED PATIENTS WITH LIVER CIRRHOSIS

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Introduction and aim. Infections are common complications in patients with liver cirrhosis (CH) and are associated with poor prognosis. In addition to this, there is the increasing problem of bacterial resistances and the difficulty in treating these complications. Our objective was to describe the features of infectious complications in hospitalized patientes with cirrhosis. **Material and methods.** We performed a descriptive study in patients with cirrhosis of 18-70 years-old who were hospitalized from March 1st, 2014 to August 1st, 2016 with a follow-up period of at least one year. Patients with a history of neoplasms (except hepatocellular carcinoma), treatment with immunosuppressants, extrahepatic autoimmune diseases and HIV infection

Table 1 (II.90). Demographic characteristic of patients with acute variceal hemorrhage.

Characteristics	24 h (T1)	72 h (T2)	5 days (T3)	P
Dosis	2 mg IV initial dosis 1 mg IV / 6 h	2 mg IV, initial dosis 1 mg IV / 6 h	2 mg IV / 4 h 2 mg IV / 4 h	N/S N/S
Patients	73	72	74	N/S
Men	54	59	52	N/S
Women	19	13	22	N/S
Age 57	55	53	N/S	
Glaswow-Blatchford	11.8	11.43	11.76	N/S
Rockall	5.01	5.99	6.32	N/S
Child Pugh				
A	19	15	17	N/S
B	44	49	44	N/S
C	10	8	13	N/S
STDA previous episode	48	47	50	N/S
Transfusions	1.2	1.5	1.8	N/S
Hospitalization (days)	2.6	4.7	5.5	N/S
Intra-hospital rebleeding	0	1	0	T1 vrs T3: p:0.7
28 days	3	2	4	T1 vrs T2: p:0.9
3 months	1	0	0	T2 vrs T3: p:0.9
Mortality	0	0	0	
Ligadure success	94%	96%	95%	
Cost by day First day ($63,000) Subsequents ($13,000)				**T1 vrs T3: p:0,002** **T1 vrs T2 p:0,04**
Cost average	$97,000	$126,350	$242,000	**T2 vrs: T3: p:0.03**

T1: terlipressin 24 h. T2: terlipressin 72 h. T3: terlipressin 5 days.

were excluded. Demographic variables, prognostic scales (Child-Pugh and MELD), infectious complications according to the clinical guidelines of the Infectious Diseases Society of America, microbiological isolates and their antibiotic resistance paterns were recorded. For the descriptive analysis, numbers, percentages, medians with inter-quartile ranges and means with standard deviation were determined. **Results.** We analyzed 292 patients with a mean age of 57 years. The predominant etiology of cirrhosis was the infection by the hepatitis C virus (34.6%). From these, 188 patients (64.3%) presented some infectious complication. There were 403 infectious complications recorded, of which 254 (63%) had some microbiological isolate. The main infections were: urinary tract infections, 98% with microbiological isolate of which *Escherichia coli* (29.62%), *E. coli* producing extended-spectrum beta-lactamases (ESBL) (15.74%), *Candida* spp. (32.4%), *Klebsiella pneumoniae* (14.81%) and *K. pneumoniae* ESBL (3.7%) were isolated; pneumonia, 10% with microbiological isolate from which *Staphylococcus aureus* (25%) and *E. coli* (25%) were isolated; spontaneous bacterial peritonitis, 12.7% with microbiological isolate from which *E. coli* (42.85%) and *E. coli* ESBL (14.28) were isolated; bacteremia isolates were *E. coli* (39.7%), *E. coli* ESBL (7.3%), *Pseudomonas aeruginosa* (8.8%), *Serratia marcescens* (4.4%) and *P. aeruginosa* multi-drug resisstant (1.4%); other less prevalent infections were soft tissue infections mainly by *S. aureus;* abdominal sepsis due to *E. coli* and *E. coli* ESBL and colitis due to *Clostridium difficile.* **Conclusions.** Infections are very prevalent in hospitalized patients with cirrhosis from which infections with antibiotic-resistant enterobacteria are increasing in prevalence.

102 ORAL
SHEAR WAVE ELASTOGRAPHY PREDICTS RISK CATEGORIES IN PATIENTS WITH CIRRHOSIS. PANDORA STUDY 2

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Introduction. Several studies have shown a good correlation between the values of hepatic and / or splenic elastography and the size of the esophageal varices (EV). However, few Mexican studies have described their experience with this non-invasive methodology. **Aim.** To assess the predictive value of shear wave hepatic elastography (HE) to identify patients with cirrhosis and different risk categories related to esophageal varices, Child-Pugh liver function class and/or type of hepatic decompensation. **Material and methods.** 709 patients were evaluated (site 1 = 347, site 2 = 362); 76 participants with IQR values / median > 0.30 were excluded; the remaining 633 subjects had a mean age of 57 ± 13; 57% were women; 310 with chronic hepatitis (49%) and 323 with cirrhosis (51%); etiology was metabolic in 38%, viral C 29%, autoimmune 12%, alcoholic 10%, CBP 7% and others 3%. HE was assessed with an Aixplorer ultrasound (Supersonic Imagine) with a SXC 6-1 convex transducer using transverse shear wave (SW) technology. Median and IQR measurements were obtained and hepatic stiffness estimated according to METAVIR semi-quantitative system. HE reliability criteria was IQR/median < 30%. Patients with cirrhosis were evaluated with endoscopy and EV classified according to Baveno 6. **Results.** Stiffness score in patients with chronic hepatitis was lower (5.2 ± 0.1 kPa) than in patients with cirrhosis (29.1 ± 0.7 kPa, $p < 0.01$), table 1 shows the differences found (kiloPascal). Hepatic stiffness was different depending on the endoscopic findings: (a) patients without EV 16.5 ± 0.4, (b) small EV 19.5 ± 0.1 and (c) large EV 44.3 ± 2.3 kPa, $p < 0.05$. **Conclusion.** Shear wave elastography methodology clearly identify patients with different risk categories, according to liver function, type of hepatic decompensation or esophageal variceal size, which might be an excellent diagnostic tool for ambulatory care Liver Clinics.

The authors did not receive a subsidy for the conduct of this study.

103 CARTEL
PIRFENIDONE AND STANDARD OF CARE IN PATIENTS WITH LIVER CIRRHOSIS. BASELINE DATA OF A DOUBLE-BLIND CLINICAL CONTROLLED TRIAL

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Introduction. Pirfenidone (PFD), a novel oral antifibrotic drug with potent anti-inflammatory and anti-oxidant properties has granted marketing authorization by EMA and FDA for the treatment of idiopathic pulmonary fibrosis. However, few studies have focused in its clinical utilization in liver fibrosis. **Aim.** To evaluate the efficacy and safety of a slow-release formulation of PFD in patients with liver cirrhosis. **Material and methods.** 180 patients with liver cirrhosis will be included in a multicenter study (6 sites), based on clinical, biochemical and imaging studies, as well as two non-invasive studies (Fibrotest and hepatic elastography) compatible with F4. Participants receive, randomly and

Table 1 (II.102).

Category	Median ± EE (kPa)	Value of p	Variables	Negative (kPa)	Positive (kPa)	Value of p
Child-Pugh A	26 ± 0.7	< 0.05	Hemorrhage	29.1 ± 0.9	36.6 ± 1.8	< 0.05
Child-Pugh B	52.4 ± 3		Ascites	17.1 ± 0.9	38.2 ± 0.9	< 0.05
Child-Pugh C	62.9 ± 5.2		Encefalopathy	29.1 ± 0.9	48.8 ± 1.0	< 0.05

Table 1 (II.103).

Parameters of comparability	White group (n = 32)	Brown group (n = 34)	Pink group (n = 30)	P value
Child-Pugh score	5.28 ± 0.57	5.33 ± 0.72	5.33 ± 0.60	0.83
Stage 1 and 2 (n and %)	13 (41) and 19 (59)	16 (47) and 18 (53)	11 (37) and 19 (63)	0.56
Liver stiffness (kiloPascals)	23.4 ± 2.6	28.9 ± 2.6	24.2 ± 2.8	0.63

blindly, 1,200, 1,800 or placebo of PFD for 2 years and are evaluated at baseline and at 1, 3, 6, 9, 12, 15, 18, 21 and 24 months. Hemodynamic evaluation by hepatic catheterization, cytokines (IL-1b, IL-6, TNF, endothelin and TGFβ) and pirfenidone levels will be evaluated in a cohort of patients. The primary success criteria are the reduction on the fibrosis score in Fibrotest and hepatic elastography. A preliminary analysis of the baseline comparability between groups is presented (triple blind). **Results.** A total of 96 patients have been recruited, and distributed as follows: white group (n = 32), brown group (n = 34), pink group (n = 30). No differences in age, etiology of cirrhosis, biochemical or imaging data was observed. Baseline data of liver function, cirrhosis stage and liver stiffness estimation between groups are presented in table 1. **Conclusion.** The present cohort of participants in this multicenter study appear to be homogeneous and well balanced according to liver function, stage of cirrhosis and baseline liver stiffness data. Recruitment process will remain active until the target population of 180 patients is achieved.
This work is funded by Cellpharma and is accepted by COFEPRIS.

105 CARTEL
EFFECTIVENESS OF DIRECT ORAL ANTICOAGULANTS IN NON-CIRRHOTIC PORTAL VEIN THROMBOSIS TREATMENT

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Background and aims. Direct oral anticoagulants (DOAC) use for the treatment of non-cirrhotic portal vein thrombosis is not yet validated. The objective of this study was to analyze the effectiveness of DOAC in the treatment of non-cirrhotic portal vein thrombosis and compare with vitamin K antagonists (VKA) in repermeabilization, thrombosis recurrence / extension and bleeding. **Material and methods.** Retrospective cohort study. Data from non-cirrhotic portal vein thrombosis patients evaluated from 2013 to 2017 were reviewed. The sample was divided in two grupos: A: DOAC treatment and B: VKA treatment, repermeabilization rate, thrombosis recurrence/extension, bleeding and mortality were compared. Statistical analysis was made by χ^2 and Mann-Whitney U tests for categorical variables and t-Student for continuous variables. **Results.** A total of 57 patients were included (A = 26 and B = 31), there were not differences between age and gender between groups (A = 51 ± 18.6 *vs.* B = 45 ± 16.7 yr, and A = 38% *vs.* B = 54% women). There were no differences in principal outcomes between groups: Repermeabilization rate A = 47% (n = 11) *vs.* B = 44% (n = 12), p = 0.81, thrombosis recurrence/extension A = 15% (n = 4) *vs.* B = 3.3% (n = 1), p = 0.10 and bleeding incidence A = 7.6% (n = 2) *vs.* B = 14.2% (n = 4), p = 0.44. Likewise, 6 month mortality was similar between groups [A = 7% (n = 2) *vs.* B = 12% (n = 4), P = 0.52], which did not have a direct relationship with portal vein thrombosis or anticoagulation complications. **Conclusions.** Repermeabilization rate and thrombosis recurrence/extension were similar between groups. There were no differences observed in bleeding related to the anticoagulation or mortality between groups. These results suggest that the DOAC effectiveness is similar to that of the VKA; nevertheless larger studies with more patients are needed to reinforce these findings.
Conflict of interests: This study didn't had any sponsorship; the authors declare no conflict of interest.

106 CARTEL
COMPARISON OF L-ORNITIN L-ASPARTATE DOSES *vs.* CONTINUOUS INFUSION IN HEPATIC ENCEPHALOPATHY III AND IV GRADES

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Introduction. There are currently no universally accepted standard treatments to improve hepatic encephalopathy (HE) due to its diverse mechanisms of pathophysiology, being the non-absorbable disaccharides (lactulose) the most studied. There is not enough clinical evidence to show that the dose is adequate for L-ornithine L-aspartate (LOLA), either in continuous infusion or at hourly doses as a treatment for HD grade III and IV. **Objective.** We retrospectively evaluated and compared the use of LOLA dose *vs.* continuous infusion in patients with HD III and IV at the Central Military Hospital. **Material and methods.** A retrospective study was carried out. We analyzed 40 records of patients with hepatic cirrhosis (HC) and EH grade III - IV admitted to the HCM for emergencies in 12 months (from September 2016 to September 2017), divided into 2 groups. Of 20, those who received LOLA at hourly doses and those who received LOLA in continuous infusion. The sample size was used for convenience. It was used as a statistical test for qualitative variables χ^2 and for discrete quantitative variables t student for independent samples, taking as statistical significance a $p < 0.005$, we used the statistical package SPSS version 19. **Results.** Total 40 patients. Group I LOLA hourly dose, of these 13 (65%) were HE grade III and 7 (35%) HE grade IV; and group II LOLA continuous infusion of which 17 (85%) were HE grade III and 3 (15%) were HE grade IV. The time it took to reverse HE, Child Pugh, Meld before and after treatment with LOLA to infusion compared to hourly dose, days of

hospital stay was compared and there was no statistically significant difference in any of the groups. **Conclusion.** LOLA can be used as an hourly or infusion dose as a treatment for HE. The use of LOLA infusion does not decresae days of hospital stay and neither does the time in which the HE reverts.
The authors declare that there are no conflicts of interest.

109 ORAL
NEW COGNITIVE FUNCTIONS FOR DETECTION OF MINIMAL HEPATIC ENCEPHALOPATHY

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Background. Minimal hepatic encephalopathy (MHE), is presented as mild neurological and cognitive alterations in 30-70% of patients with chronic liver disease. The cognitive test to diagnose MHE is the psychometric hepatic encephalopathy score (PHES) which has sensitivity/specificity of 39% and 88%. The PHES consists of 5 tests that evaluate the speed of processing, cognitive flexibility, working memory, attention, speed and motor precision, visual perception, visuospatial orientation and visual construction. However, it is necessary to explore other functions that may increase the sensitivity and specificity of the test. The Neuropsi battery has 7 cognitive domains with standards for the Mexican population which could detect new alterations in patients with MHE. **Aim.** To identify and quantify altered cognitive functions in cirrhotic patients with MHE as new and probable markers for diagnosis of disease. **Material and methods.** Seventy-one patients with liver cirrhosis (56.3%, women) age 50 ± 11.3 years, who attended the Gastroenterology Service of the Hospital General de México. Through the PHES two groups were classified: 1. Cirrhosis with MHE and 2. Cirrhosis without MHE. χ^2 test was applied to determine the association between PHES (MHE / no MHE) and cognitive alteration of Neuropsi (alteration / non-alteration). To compare each subtest of the Neuropsi, U-Mann Whitney tests were performed. A value of $p < 0.05$ was considered significant. **Results.** A significant association was found between PHES and Neuropsi test to detect MHE and cognitive impairments, χ^2 (1) = 5.15, p = 0.023. With the PHES battery, 42 patients with MHE were detected (59.2%). Between MHE vs non-MHE, have been found changes in attention (p = 0.025) and concentration (p = 0.001), in language (denomination, p = 0.035, comprehension, p = 0.03), visual abilities (coding, p = 0.005; evocation, p = 0.048), executive functions (conceptual p = 0.006 and motor functions p = 0.037). **Conclusions.** In patients with MHE, the Neuropsi battery coincides with PHES in altering motor and perceptual alterations. The functions added with deficits that can be considered to detect MHE are alterations in the language, concentration and conceptual executive functions.
Conflict of interests: This work has been totally subsidized by funds from CONACYT project 234269.

112 CARTEL
SENSITIVITY AND SPECIFICITY OF TWO VARIANTS OF POTENTIAL EVOKED P300 IN THE DIAGNOSIS OF MINIMAL HEPATIC ENCEPHALOPATHY

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Background. In recent years, interest has grown in finding new tests to detect and diagnose minimal hepatic encephalopathy (MHE) because it increases the risk of accidents and predicts open encephalopathy and death. In the MHE there are subtle motor and cognitive alterations. It is diagnosed with the psychometric hepatic encephalopathy scores (PHES) and the critical flicker frequency (CFF). A meta-analysis of 9 studies (622 patients) reported for PHES and FCC combined sensitivity of 61% and specificity of 79%. Recently it has been proposed to evoked potentials P300 (2 auditory stimuli) to diagnose the MHE. The P300 is a measurement obtained from the electroencephalogram and is considered a neurophysiological marker whose sensitivity and specificity is unknown. The P300 responds to the increase in difficulty being more demanding with 3 stimuli one of them a distractor. **Aim.** Determine the sensitivity and specificity of the potential evoked P300 *vs.* PHES and CFF in relation to the level of difficulty low and high. **Material and methods.** Participants were 51 healthy people 45.83 ± 12.07 years of age and 127 patients with liver cirrhosis 56 ± 10.1 years of age. The MHE was determined if both PHES and CFF tests were positive. The latency value of P300 was measured and the 95% confidence interval (95% CI) was considered for the control group. In the cirrhotic group, abnormal P300 was determined if the latency value exceeded the 95% CI of the control group. Using 2 x 2 tables, the sensitivity and specificity for each type of P300 was determined. **Results.** MHE was detected in 40 patients (22.5%). P300 of low difficulty was altered in 56.2% and high difficulty in 48.7%. The sensitivity was 77.8% low difficulty and 55.0% high difficulty *vs.* 61% combined. The specificity was 46.3% and 53.5% respectively *vs.* 79% combined. **Conclusions.** The low difficulty P300 has greater sensitivity than the PHES and CFF combined with lower specificity. The increase in difficulty of the P300 has no positive effect for detecting the MHE.
Conflict of interests: This work has been totally subsidized by funds from CONACYT project 234269.

118 CARTEL
PROCALCITONIN AS A PREDICTOR OF MORTALITY AT 28 DAYS IN HEPATIC CIRRHOSIS, IN THE DEPARTMENT OF GASTROENTEROLOGY OF HOSPITAL JUÁREZ DE MEXICO

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Background and aims. Bacterial infections are the main causes of hospitalization in patients with liver cirrhosis, with high morbidity and mortality, in recent years procalcitonin has been used as a predictor of bacterial sepsis, so the objective of this study is to determine if procalcitonin is useful as a predictor of 28-day mortality in patients with liver cirrhosis. **Materials and methods.** Type of study: Descriptive, transversal, observational. Patients with liver cirrhosis admitted to hospitalization for acute decompensation or ACLF, in the Department of Gastroenterology from March 1, 2016 to September 14, 2018. Variables: Age, sex, patients with acute decompensation, with ACLF, procalcitonin and mortality to 28 days. Results: 137 patients were studied, mean age of 56 years, 74 men and 63 women, 101 had acute decompensation (73.7%) and 36 ACLF (26.3%), of these the general mortality rate was 17.5%, bacterial infections were present in 40.1%, using the ROC curve test, mortality was determined in patients with bacterial sepsis for procalcitonin = 0.716 (CI 95%, 0.547-0.885, p = 0.012, Youden index of 1.1 ng/mL with sensitivity of 62% and specificity of 64%) (Figure 1), and in general mortality with area under the curve for procalcitonin = 0.766, (CI 95%, 0.658-0.874, P: 0.000, Youden index of 0.99 ng/mL with sensitivity of 62%, specificity of 72%) (Figure 2). **Conclusions.** Based on the results obtained, it can be concluded that procalcitonin is a useful parameter as a predictor of 28-day mortality in patients with bacterial sepsis, however is also demonstrated that its usefulness in the general mortality of patients with cirrhosis, establishing a cut off point of 0.99 ng/mL with specificity of 72%, sensitivity 62%, for prediction of mortality at 28 days, with a concordance between high levels of procalcitonin and the death of patients with cirrhosis.

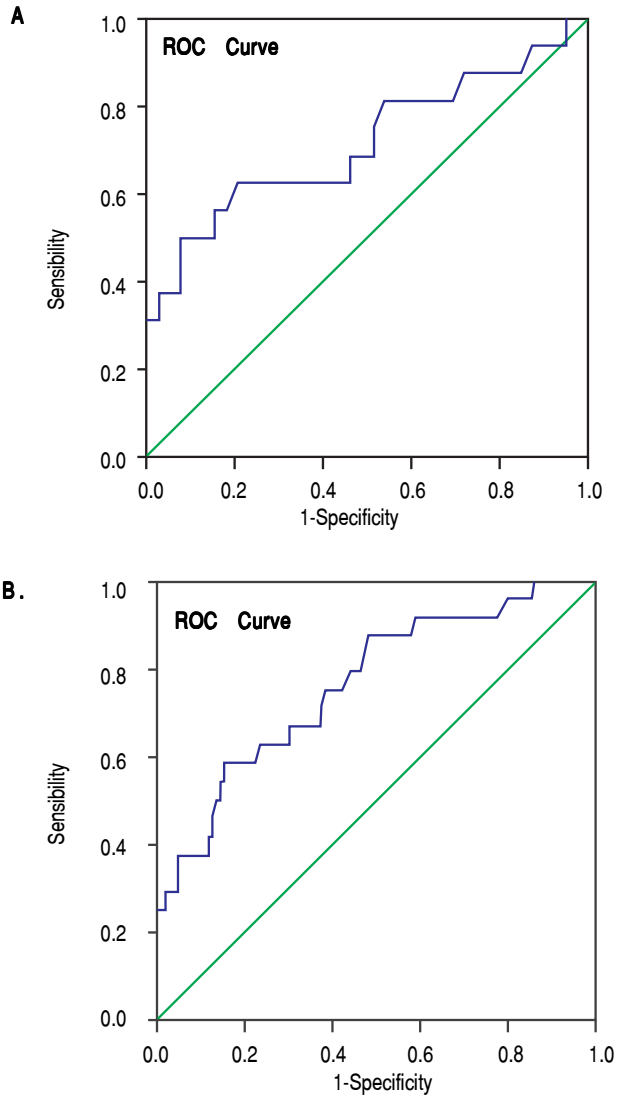

Figure 1 (II. 118).

119 CARTEL
CORRELATION OF LYSOSOMAL ACID LIPASE ACTIVITY LEVELS WITH CHILD PUGH SCALE IN PATIENTS WITH LIVER CIRRHOSIS OF CRYPTOGENIC ORIGIN

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Background. Lysosomal Acid Lipase Deficiency (LALD) is a genetic disease with LIPA gene mutation located on chromosome 10q, not allowing the hydrolysis of cholesterol esters and triglycerides to free cholesterol and fatty acids respectively. The estimated prevalence ranges from 1 in 40,000. The LALD has 2 clinical phenotypes which are the Wolman's Disease of infantile presentation and Cholesterol Esters Storage Disease (CESD) which has clinical presentation in the adult. **Objectives.** Establish a correlation of lysosomal acid lipase (LAL) levels with the Child Pugh Scale. To establish correlation of LAL activity levels with the presence of esophageal varices and severity according to the Baveno's classification. To establish correlation of LAL with the complications associated with portal hypertension. **Material and methods.** Study design. Observational, descriptive, cross-sectional study. Participants. Patients with a diagnosis of Cryptogenic Cirrhosis who have accepted LAL activity measurement. The variables were analyzed by linear regression. **Results.** A total of 31 patients with cryptogenic cirrhosis were analyzed, 27 (87%) female and 4 (13%) male, average age was 60.39 ± 12.06, MELD 11.7 ± 4.0, Child Pugh 7.97 ± 1.58. Patients in the clinical stage of Child Pugh A 8 (26%), B 18 (58%) patients and C 5 (16%) patients. The LAL levels compared with the Child

Pugh Clinical Stage were obtained p = 0.504. Related to esophageal varices, a comparison was made between the levels of LAL and esophageal varices obtaining a p = 0.896. The complications of liver disease were analyzed. One patient presented hepatic encephalopathy, 8 ascites and 11 variceal hemorrhage. **Conclusions.** The LAL activity levels do not correlate with the severity of the Child Pugh Scale. The presence or absence of esophageal varices and their severity do not correlate with the level of LAL, likewise no association was found between the activity levels of the Lysosomal Acid Lysosomal and the complications associated with portal hypertension.
Conflicts of interest. The authors declares that there is no conflict of interest.

129 CARTEL
PREVALENCE AND RISK FACTORS FOR DYSGEUSIA IN PATIENTS WITH HEPATIC CIRRHOSIS

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Background and aim. Taste alterations called dysgeusia (s), in patients with hepatic cirrhosis (HC), have been little studied and are under diagnosed, with a reported prevalence of 23% in the 90's. The presence of dysgeusia does not put the state of health at immediate risk, but it plays a fundamental role in weight loss due to a lower intake of energy and therefore macro and micronutrients. The aims is, determine the prevalence of dysgeusia in patients with hepatic cirrhosis, and evaluate the risk factors. **Material and methods.** Descriptive cross-sectional study, in which 76 patients with HC were evaluated to determine the prevalence of dysgeusia. The energy intake was analyzed, as well as the subjective global evaluation and the nutritional risk scale of the Royal Free Hospital. Descriptive analysis: quantitative variables of free distribution are presented as median and inter quartile range (IQR). Qualitative variables such as number and percentage. Bivariate analysis: Mann-Whitney U for free distribution variables, as well as χ^2 or Fisher's exact test. Statistical significance was taken as $p < 0.05$. **Results.** The overall prevalence of dysgeusia was n = 62 (81.6%), the median age was 57 years (IQR 53-64), female sex represented 50% of total population, the main etiologies were hepatitis C virus, alcoholism and cryptogenic cirrhosis (47.4%, 22.4% and 13.2%, respectively), Meld score was 10 (IQR 9-12). No significant differences were found according to energy consumption in patients without or with dysgeusia (1685 kcal [IQR 1433-1918] *vs.* 1685 [IQR 1197-2446], p = 0.78), protein consumption (58.5 g [IQR 52.8- 65.1] *vs.* 58.5 [IQR 41.2-83.5], p = 0.89), subjective global evaluation p = 0.30 and nutritional risk scale p = 0.24. The risk estimation for the presence of dysgeusia was made, finding the following odds ratios (OR), female sex 2.04 (95% CI 0.61-6.18), hypertension 1.14 (95% CI 0.85-1.52), ascites 1.12 (95% CI 0.88-1.42) and esophageal varices 1.02 (95% CI 0.82-1.27). **Conclusion.** The prevalence of dysgeusia in our study population was very high (81.6%), this being one of the few studies that talks about this complication.
The authors declares that there is not conflict of interest.

137 CARTEL
PREIMMUNIZATION STATUS AND TRANSIENT IMMUNOSUPRESSION WITH CYCLOSPORINE A AFFECTS TRANSDUCTION EFFICIENCY OF ADENOVECTORS IN CIRRHOTIC RATS

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Background and aims. Globally, humans have been exposed to wild-type Adenovirus infection through natural causes, consequently developed preimmunization status with NAB's and CTL's, factors that could diminish significantly efficiency of Ad transduction and transgene expression. Evaluation of the biodistribution and expression of adenovectors in preimmunization status is lacking. We also consider the use of an immunosuppresor drug in order to modulate the pre-existing immune response against the adenovirus. **Material and methods.** Cirrhotic-CCl4 rats were divided in cirrhotic, cirrhotic with immunosupresion and cirrhotic-pre-immunized with/without immunosupresion treatment. Since the rat is not a natural host for the virus, a pre-immunization was made by a systemic administration of 3×10^{11} vp/total Ad-DhuPA in the fifth week of the CCl_4 regimen. In the eight week all rats were administered with a second dose of Ad-DhuPA. Transient immunosupresion was induced with 40 mg/kg of CsA administered a day before, the day of, and a day after the second dosage of Ad. Animals were sacrificed 2 and 72 h after. Principal organs were analyzed for transduction (real time PCR) and transgene expression (ELISA). **Results.** At 2 h adenovector genome showed a peak with mean value of 200,000 vp/μg DNA in cirrhotic-liver. Spleen and lung were positive also for adenovirus genomes. A ten-fold diminution of the adenovector genome was observed at 72 h but Ad-DhuPA prevailed in liver and spleen. At the same time, pre-immunized rats showed the presence of the Ad-DhuPA in a greater number of organs including kidney, heart and others. Human uPA determination at 72 h showed mean levels of 45 ng/mg total protein in healthy rat liver. Meanwhile, cirrhotic rat liver had 4.5 ng/mg total protein. Preimmunized cirrhotic rats expressed the surprising concentration of only 150 pg/mg total protein in liver. In these groups uPA was present in spleen and kidney, but was not detected in the rest of the organs. **Conclusion.** Cyclosporine A treatment seems to improve inflammatory cell infiltrate, hepatic markers and survival in preimmunized cirrhotic rats; but did not change quantitatively or qualitatively the adenoviral vector biodistribution or transgene expression.

140 CARTEL
CORRELATION BETWEEN RELATIVE SUPRARRENAL INSUFFICIENCY, MORTALITY AND ACUTE VARICEAL BLEEDING IN CIRRHOTIC PATIENTS OF THE JUAREZ HOSPITAL IN MEXICO: CASE SERIES CONTROL

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Background and aims. The cortisol is n hormone closely related to variceal bleeding (VB). The relative adrenal insufficiency (RAI) is associated with VB but at the same time is very contradictory. RAI has been associated with an increase in mortality and hospital readmission of cirrhotic and non-cirrhotic patients. The method we use to determine RAI was the plasma cortisol less than 15. The aim is demonstrate that the RAI has an association and effect in the intrahospital mortality of the cirrhotic patients with VB. **Material and methods.** Patients with cirrhosis decompensated by VB of any etiology at the Gastroenterology Service at the Hospital Juárez de México from June 2017 to December 2017. The group of series were: decompensated cirrhotic patients BY VB without RAI. The group of cases were cirrhotic patients decompensated by VB with RAI. The diagnostic of RAI was with plasma cortisol from 7 to 9 in the morning, value less than 15 was diagnostic of RAI. Type of study: prospective cases and controls. Independent variable: Mortality. Dependent variable: Patients with VB with and without RAI. Statistical analysis: χ^2 for nonparametric variables and Student t for parametric variables, considering $p < 0.05$ as statistically significant. **Results.** The incidence of RAI in patients with acute variceal bleeding was 49% and intrahospital mortality of patients with VB plus RAI was statistically significant with p 0.008 (Table 1 and Figure 1)). **Conclusion.** In our study, the incidence of RAI in patients with VB was 49% and probably RAI was associated with higher intrahospital mortality in patients with VB plus RAI, however, studies with more patients and multicenter studies are needed to confirm this.
Conflict of Interest: None.

Table 1 (III.140). Demographic characteristics of patients with relative adrenal insufficiency and upper gastrointestinal hemorrhage.

Characteristics	With RAI	Without RAI	P
Patients with UGH	18	19	
Men	12	9	N/S
Women	6	10	N/S
Age	57.5	59.15	N/S
MELD NA	20.5	15.7	N/S
Child Pugh			
A	2	4	N/S
B	10	11	N/S
C	6	4	N/S
Albumin	2.4	2.6	N/S
Cortisol	12.17	23.6	**0.03**
HDL	20.2	33	**0.04**
Intrahospital mortality	10	1	**0.008**

UGH: Upper gastrointestinal hemorraghe. RAI: Relative adrenal insufficiency. HDL: High density lipoproteins.

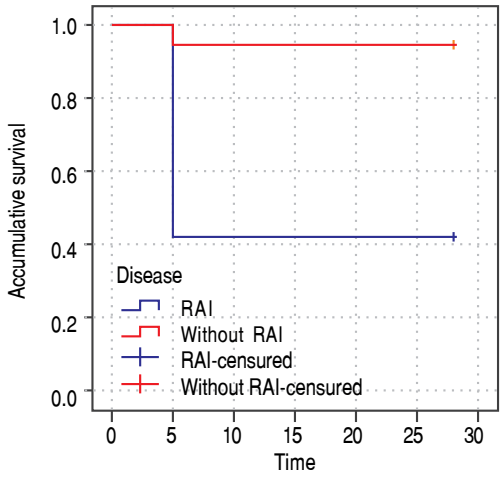

Figure 1 (II.140). *Supervivence functions. Kaplan Meier graph (time = days).*

III. LIVER DISEASE, CHOLESTATIC AND CHRONIC

37 CARTEL
PROGNOSTIC FACTORS ASSOCIATED TO SURVIVAL IN PATIENTS WITH DIAGNOSIS OF PRIMARY BILIARY COLANGITIS OF HOSPITAL JUÁREZ DE MÉXICO

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Introduction and objectives. Primary biliary cholangitis (CBP) is a chronic cholestatic disease characterized by an autoimmune destruction of intrahepatic bile ducts. Poor prognostic factors have been identified related to poor response to treatment and mortality, such as: male gender, portal hypertension, GP 120 antibodies, centromere antibodies, the survival mean of 7.5-9 years has been reported in the literature. **Objective.** To identify the independent prognostic factors associated with survival in patients diagnosed with PBC in the Hospital Juárez de México. **Material and methods.** Cohort patients diagnosed with PBC according to EASL criteria. Period January 2016-January 2018. Clinical variables, laboratory, cabinet, treatment, complications and outcome that was death were analyzed. Exploratory analysis and stratified analysis. Survival was calculated using the Kaplan-Meier method to know the median and 95% confidence intervals. To evaluate the association, univariate χ^2 analysis was used, exact Fisher, later variables $p < 0.05$ were included in multivariable analysis of proportional hazards Cox stepwise forward to find the associated independent variables, Hazard ratio 95% IC was obtained, the model was adjusted number of variables according to the patient-event relationship.

Results. Fourty-six female patients 95.6%, age X = 55.3 (23-83) years, connective tissue disease 52%. ChildPugh A 60.9%, B 36.9%, C 2.2%. 8.6% mortality in the univariate analysis, the associated variables were: presence of autoimmune disease p = 0.02, hospitalizations for encephalopathy p = 0.003, ascites p = 0.001, infections p = 0.024, esophageal varices p = 0.04. In the models evaluated ascites HR = 10.4 95% CI (1.08-100) was the only independent variable associated with mortality. In Kaplan-Meier the mean survival without ascites was 80 months 95% CI (74-86), mean survival in patients with hospitalizations for ascites of 52.4 months 95% CI (37-67) and was statistically significant with Log Rank 0.01 ($p < 0.05$). **Conclusions.** In this cohort of patients with PBC under treatment with ursodeoxycholic acid we observed a lower survival of 80 months, survival is compromised by the presence of ascites as a cause of hospitalization, this variable was the only independent variable associated both in the univariate analysis and multivariate for mortality.
The authors deny any conflict of interest.

115 CARTEL
FREQUENCY OF HEPATIC DISEASE DURING PREGNANCY IN THE HOSPITAL JUÁREZ DE MÉXICO

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Introduction and objectives. Hepatic disease during pregnancy occurs in up to 3% of the population. Pathologies specific to pregnancy include hyperemesis gravidarum, intrahepatic cholestasis of pregnancy (ICP), acute fatty liver of pregnancy (AFLP), and HELLP syndrome, whose complication affect the maternal-fetal prognosis. **Objective.** To determine the frequency of hepatic diseases during pregnancy in the Hospital Juárez de México. **Material and methods.** This was a retrospective, observational, and descriptive study carried out with hospitalized patients in the Obstetrics and Gynecology Service because of hepatic disease during pregnancy during the period between January 2017 and December 2017. We analyzed anthropometric measures, comorbidity, obstetric backgrounds, diagnosis, biochemical parameters, complications, and mortality. The analysis was done through descriptive statistics and a significant value of $p < 0.05$ using SPSS v22. **Results.** We found 22 patients with hepatic disease during pregnancies. They were 28.5 ± 8.2 years old, had a BMI of 29.6 ± 6.4 kg/m^2, diagnosed at 34.6 SDG. Their reported comorbilities were: hypothyroidism 2 (9.1%), epilepsy 1 (4.5%), and paroxysmal supraventricular tachycardia 1 (4.5%). Ten patients (45.5%) were found to have HELLP syndrome, 9 (40.9) with ICP, one (4.5%) with severe criteria preeclampsia, one (4.5%) with AFLP, and one (4.5%) with overlap syndrome (Table 1). Among the patients with ICP, two (9%) presented twin pregnancies, the patient with overlap syndrome died six months hence. During their hospitalization, eight patients (36%) were admitted through the ICU; seven (87.5%) with HELLP syndrome, two (9.1%) with an acute renal abrasion. Regarding the product of gestation, the reported gestational age of Capurro was 35.5 ± 3.5 weeks, weighting 2,391 ± 853 gr and measuring 46 ± 7.3 cm. **Conclusions.** Our results are similar to previous reported data showing a greater frequency of HELLP Syndrome and ICP. We consider it is vitally important to focus on the recognition of hepatic disease present during gestation, since their diagnosis and timely treatment help avoid both maternal and fetal complications.
The authors do not have any conflicts of interest.

117 CARTEL
USEFULNESS OF THE MEASUREMENT OF ESR AND CRP IN ACUTE ON CHRONIC LIVER FAILURE (ACLF), IN THE DEPARMENT OF GASTROENTEROLOGY OF HOSPITAL JUÁREZ DE MÉXICO

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Background and aims. Acute on chronic liver failure (ACLF) is a frequent entity, the pathophysiological basis of the development of the systemic inflammatory process is a determining factor in the progression of ACLF, the objective of this study is to determine the usefulness of the measurement of ESR (erythrocyte sedimentation ratio) and CRP (C-reactive protein) as predictors of ACLF as well as 28-day mortality. **Material and methods.** Type of study: Descriptive, transversal, observational. Patients with liver cirrhosis admitted to hospitalization for acute decompensation or ACLF, in the Department of Gastroenterology from September 1, 2017 to January 14, 2018. Variables: Age, sex, patients with acute decompensation, with ACLF, ACLF grade, ESR, CRP and 28-day mortality. **Results.** 69 patients were studied, mean age of 55 years, 38 men and 31 women, 49 had acute decompensation (71%) and 20 ACLF (29%) of the latter 14.5% had ACLF grade 1, 8.7% ACLF grade 2 , and 5.8% ACLF grade 3, the general mortality rate was 11.6%. The ROC curve test was used, determining in patients who present-

Table 1 (III. 115). Anthropometric characteristics and obstetric history.

Parameter	HS	ICP	PSD	AFLP	OLS
Age	29.1 ± 8.2	29.5 ± 8.9	30	17	25
BMI	30.1 ± 8.3	29.9 ± 4.3	36.3	24.8	24.8
Gestation weeks	35.5 ± 4.2	35.8 ± 1.9	37.4	35.5	21.5
Gesta 1	3 (30%)	4 (44%)	1 (100%)	1 (100)	1 (100)
Abortions	1 (10%)	2 (22%)	0	0	0

HS: HELLP syndrome. ICP: intrahepatic cholestasis of pregnancy. PSD: preeclampsia with severity data. AFLP: acute fatty liver of pregnancy. OLS: overlap syndrome.

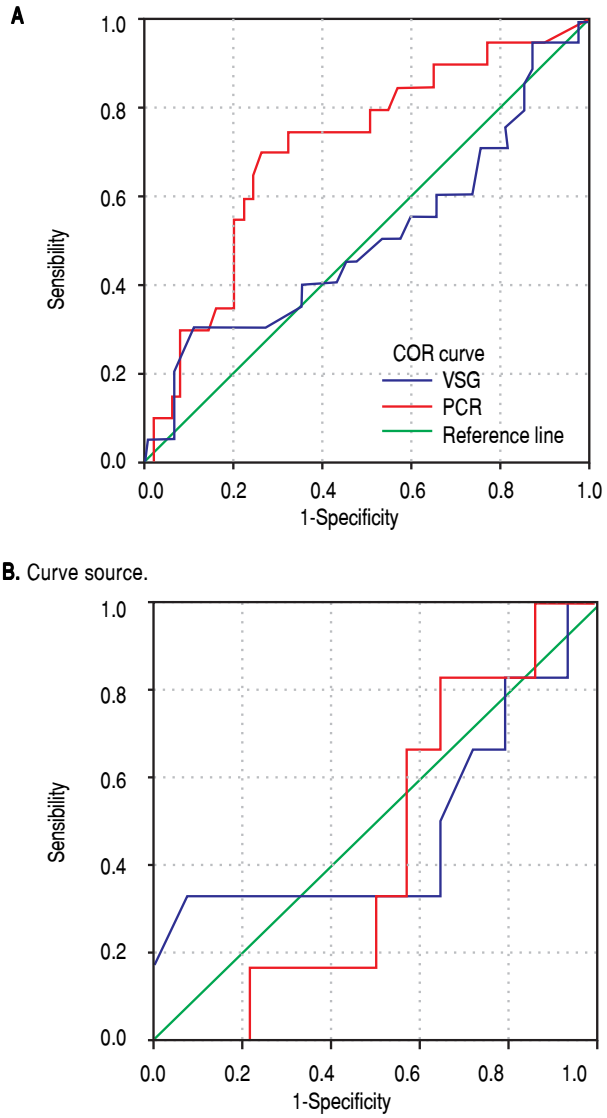

Figure 1 (III.117). Diagonal segments was source through conections.

ed ACLF an area under the curve for CRP = 0.709 (CI 95% 0.573 - 0.845, p = 0.007, with a Youden index of 1 mg/dL with sensitivity of 90% and specificity of 71%) and of VSG = 0.505 (CI 95% 0.342 - 0.668, p = 0.947) (Figure 1A), while in 28-day mortality the area under the curve for CRP = 0.440 (CI 95% 0.183-0.689, p = 0.680) and VSG = 0.488 (CI 95% 0.169-0.807, p = 0.934) (Figure 1B). **Conclusions.** According to the results obtained, it can be concluded that CRP is a useful parameter that can predict patients with ACLF with sensitivity of 90% and specificity of 71% at a CRP value of 1 mg/dL. In terms of mortality, CRP and ESR have low sensitivity and specificity for the prediction of mortality at 28 days.

IV. VIRAL HEPATITIS

24 CARTEL
MANAGEMENT WITH PENTOXIFYLLINE IN FULMINATING HEPATITIS, PILOT STUDY

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Background and aim. Fulminant hepatitis is caused mainly by viruses or chemical agents. It reaches between 70%-90% of mortality, has a prevalence of 1/1,000,000. In this pathology, oxidative stress and proinflammatory cytokines (TNFα, IL-1B, IL-6 and factor NFK-β) are fundamental factors that contribute to the poor prognosis of the disease. Pentoxifylline has antioxidant activity and is a potent inhibitor of the secretion of factors related to the acquired and innate immune response, cell differentiation and apoptosis. This study aims to assess the response of patients diagnosed with fulminant hepatitis with pentoxifylline. **Material and methods.** We evaluated 5 cases of patients with fulminant hepatitis, 4 pediatric patients and 1 adolescent, manifested with grade IV encephalopathy, cerebral edema, jaundice and multiple organ failure, diagnosed with imaging and serological studies, three of them during their process received treatment with pentoxifylline 100 mg every 12 h, in addition in all of them, supportive treatment, fresh plasma, vitamin K, anti-ammonium measures, antibiotics, ventilatory support, parenteral solutions and parenteral and enteral feeding when they tolerated the oral route, among others, were administered. **Results.** The 3 patients who were added pentoxifylline to their aforementioned support treatment showed a favorable response in relation to their cognitive, hemodynamic and functional status 2 weeks after starting the treatment, improving liver function tests clinically and laboratory, bleeding time and general condition, thus allowing its discharge on average at 3 weeks, all presenting a subacute hepatitis, in comparison with the remaining 2 patients, a 17-year-old adolescent and another 4-year-old preschool with fulminant hepatitis of different etiology which were handled exclusively with support measures previously established, with the outcome of the death of the same. **Conclusion.** The use of Pentoxifylline in the treatment of fulminant hepatitis seems to have an encouraging response because in this pilot study 3 of the patients survived and two of them died in the event. For this reason, we suggest that multicenter and randomized studies should be done to know their real efficacy.

02 CARTEL
CURRENT DISTRIBUTION BY GENOTYPES OF HEPATITIS C IN MEXICO

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Introduction and aim. In North America, the most common genotype is 1a. Previous studies have reported genotype 1b as the most common in México; but, we don't have recent studies. Our aim was to report the distribution according to genotypes of hepatitis C virus (HCV) and the characteristics of patients seen in two Reference Centers. **Material and methods.** We included all patients with HCV infection confirmed by viral load and genotype seen between January-2017 to January-2018. The obtained data were summarized using descriptive statistic. **Results.** A total of 245 files of patients diagnosed with hepatitis C were evaluated; 52 patients who did not have viral load and genotype were excluded. We included 193 patients, with a mean age of 55±12 year-old, 103 (53.4%) were women. Risk factors identified to acquire HCV were blood transfusion before 1992 in 118 patients (61.1%), in 26 (13.5%) it was not possible to identify a known risk factor, 19 (9.8%) were HIV positive, 18 (9.3%) had history of intravenous or inhaled drugs, 6 (3.1%) hemophilics, and 6 (3.1%) reported multiple sexual partners with high risk practices. The most common genotype was 1a in 120 patients (62.2%), 45 were 1b (23.3%), 20 were genotype 2 (10.4%), 5 were genotype 3 (2.6%), 2 were genotype 4 (1.0%), a patient (0.5%) with mixed genotype 2/4. According with the degree of fibrosis 109 (56.5%) had cirrhosis, of them 52 (47.7%) were Child A, 40 (36.7%) B, and 17 (15.6%) C. F3 22 (11.4%), F2 30 (15.5%), F1 11 (5.7%), F0 21 (10.9%). The origin of 153 patients was Mexico City and Estado de México (79.3%), the others form different states of the country. **Conclusions.** In our population the most important risk factor for HCV remains blood transfusion before 1992. Actually genotype 1a is the most common in patients seen predominantly in the central region of our country. When seeking medical attention, most patients have cirrhosis or some degree of fibrosis.

03 CARTEL
FREQUENCY OF EXTRAHEPATIC MANIFESTATIONS IN A GROUP OF PATIENTS WITH DIAGNOSIS OF CHRONIC HEPATITIS C

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Introduction and aim. Chronic hepatitis C (CHC) usually is asymptomatic or presents with unspecific or extrahepatic manifestations; for this reason, the diagnosis of this disease requires a high level of suspicious based on the presence of risk factors. Our aim was to know the frequency and type of extrahepatic manifestations presented by patients with CHC seen in our clinic. **Material and methods.** We included all patients with diagnosis of CHC confirmed by viral load and genotype, seen between January 2017 and January 2018 in a Tertiary Care Center. The obtained data were summarized through descriptive statistic. **Results.** A total of 174 clinical records were evaluated, we excluded 12 patients because they didn't have viral load and genotype. We included 162 patients, with a mean age of 54 ± 12 year-old, 85 (52.5%) were men. The most common risk factor to acquire CHC was blood transfusion before 1992 found in 100 patients (61.7%), in 25 (15.4%) was not possible to identify a known risk factor, 16 (9.9%) were HIV positive, 16 (9.9%) had history of intravenous or inhaled drugs, and 5 (3.1%) reported multiple sexual partners with high risk practices. The most common genotype was 1a that was found in 96 patients (59.3%), 43 were 1b (26.5%), 16 were genotype 2 (9.9%), 4 were genotype 3 (2.5%), 2 were genotype 4 (1.2%), a patient (0.6%) had mixed genotype 2/4. According with the degree of fibrosis 87 (53.7%) had cirrhosis, of them 42 (48.3%) were compensated, and 45 (51.7%) decompensated. F3 21 (13%), F2 26 (16%), F1 11 (6.8%), F0 17 (10.5%). An 80.2% of patients had astenia/adynamia/fatigue, and 58 patients (35.8%) had some extrahepatic manifestation; of them, 26 had vasculitis (44.8%), 15 rheumatoid arthritis (25.9%), 10 membrano-proliferative glomerulonephritis (17.2%), 4 fibromyalgia (6.9%), and 3 psoriasis (5.2%). **Conclusions.** Genotype 1a was the most common. CHC is not asymptomatic; on the contrary, it presents with nonspecific clinical symptoms, in which extrahepatic manifestations are common in more than 1/3 of the patients.

17 CARTEL
SOCIOECONOMIC PROFILE OF PATIENTS WITH CHRONIC INFECTION FOR HEPATITIS C VIRUS IN TREATMENT WITH DIRECT ACTION ANTIVIRALS ATTENDED AT THE INCMNSZ

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Introduction. Hepatitis C virus infection is estimated to affect 80 million people. In Mexico, the prevalence is 0.4%. With the advent of direct-acting antivirals (DAA), sustained viral response has been reported > 95%. Nowadays, a cure is possible with these drugs that have an adequate safety profile and are administered for short periods of time. Unfortunately, the costs are high ($55,000 to 100,000 dollars) and in Mexico they can exceed 700,000 MXN. In response in 2016, the INCMNSZ initiates a Drug Delivery Program with costs below 30%. **Objective.** To know the socioeconomic characteristics of the patients included in the Medicine Supply Program of the INCMNSZ. **Material and methods.** This is a cross-sectional study that includes patients over 18 years of age, with a complete socioeconomic study and who entered the DAA Program from April 2016 to June 2017. Demographic and socioeconomic variables were evaluated: type of family, number and occupation of economic providers, monthly family income, economic dependents, income-expenses ratio, home characteristics, family health and mechanisms for payment of treatment. The results were reported using descriptive statistics.

Results. We included 121 cases. The median age was 59.5 years (28-81). Up to 57% of patients were male. Regarding schooling, 32% completed a Bachelor's degree. A large part of patients were housewives or pensioners. Up to 45% reside in Mexico City. In 35% of cases, the family was nuclear, with 1 to 4 economic providers and with a range of 2,000 to 135,000 Mexican pesos as a monthly income and with 4.03 per capita Minimum Wages. Home ownership was reported in 54%. Up to 57% of cases were classified as middle class. Social security was reported in 59%. The treatments were covered based on savings, sale of real estate, bank loans, personal loans or Institutions and even Medical Insurance. **Conclusions.** DAAs currently represent an effective option for the treatment of HCV infection. However, the accessibility of these medications at a reasonable low price is related to the socioeconomic conditions of the patient, so it is important to evaluate these aspects in the management of diseases with a high economic impact.

The present work did not present sponsorship.

35 CARTEL
CLINICAL-EPIDEMIOLOGICAL CHARACTERISTICS OF PATIENTS WITH DIAGNOSIS OF AUTOINMUNE HEPATITIS OF HOSPITAL JUÁREZ DE MÉXICO

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Introduction. Autoimmune hepatitis (HAI) is a chronic inflammatory disease of generally progressive course, affecting children and adults, more frequently the female gender (4: 1), with bimodal presentation at puberty and between the 4th and 6th decade of life; it can cause cirrhosis, hepatic carcinoma and liver failure. According to the AIH International Group, the diagnosis is based on the combination of biochemical, immunological and histological characteristics, circulating autoantibodies and increased serum levels of gammaglobulins. It may be accompanied by extrahepatic manifestations such as thyroiditis, Sjogren's disease and scleroderma. In Mexico, the incidence and prevalence of this disease is unknown. **Objective.** To identify the clinical and epidemiological characteristics of patients diagnosed with autoimmune hepatitis from the outpatient clinic of the Hospital Juárez de México. **Material and methods.** Retrospective, cross-sectional, analytical, descriptive study, carried out from January 2014 to December 2018; through the review of files. We analyzed clinical variables (gender, age, autoimmune diseases, presence of large esophageal varices according to Baveno.) Descriptive statistics were used. **Results.** Sixteen patients diagnosed with AIH were evaluated; female gender 75% (n = 12), male25% (n = 4); average age of (44.5 years); interquartile age period: 20-30 years 25% (n = 4); 31-40 years 18.75% (n = 3) and > 40 years 56.25% (n = 9). 43.75% (n = 7) had extrahepatic manifestation: hypothyroidism 85.71% (n = 6) and Sjogren syndrome 14.28% (n = 1); the presence of esophageal varices was 50% (n = 8); (VEPB) 62.2% (n = 5) and (VEGB) 37.8% (n = 3). **Conclusions.** The results in this study are similar to those reported in the literature, hypothyroidism was the main extrahepatic manifestation. The presence of portal hypertension was characterized more frequently by VEPB.

36 CARTEL
HEPATIC FIBROSIS DETERMINED BY ELASTOGRAPHY IN PATIENTS WITH DIAGNOSIS OF AUTOINMUNE HEPATITIS OF HOSPITAL JUÁREZ DE MÉXICO

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Introduction. Autoimmune hepatitis (HAI) is a chronic liver disease, with long duration of inflammatory activity that leads to liver fibrosis; liver biopsy is considered the gold standard to establish the diagnosis and make treatment decisions, with a complication rate of 20% (pain, bleeding or hemobilia); transient elastography (ET) is a non-invasive method for the early detection of hepatic fibrosis. **Objective.** Present a series of cases with AIH and determine the presence of liver fibrosis with TE. **Material and methods.** Case series from January 2014 to December 2017; which included 12 patients with AIH under the simplified criteria, both genders and with ages ranging from (19 to 71 years) who underwent fibroscan using an MX probe, considering the study to be valid with an SR > 70% and an IQR < 30% The results were correlated with the METAVIR scale for the degree of fibrosis of cholestasic diseases > 7.3 kilopascals (Kpa). **Results.** Sixteen patients with a diagnosis of AIH were evaluated, excluding 4 patients due to not having elastography; 9 (66%) women and 4 (34%) men. The average age was 44.75 years; degrees of fibrosis: F-1 (8.3%), F-2 (8.3%), F2-F3 (16.4%), F3-F4 (16.6%) and F-4 (41.6%). **Conclusions.** The possibility of cirrhosis in patients with HAI can be predicted at present with the use of TE that allows us to establish degrees of fibrosis in an early and non-invasive way, with ease to perform the follow-up.

72 CARTEL
SCREENING PROGRAM OF VIRAL HEPATITIS AND OTHER INFECTIOUS DISEASES IN A HIGH-RISK HEALTH CARE GROUP IN MEXICO

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Background and aim. Health care workers (HCWs), specifically dentists, are at the front line for acquiring blood-borne virus (BBV) infections. The highest proportion of occupational transmission is through percutaneous injuries via hollow-bore needles. Several studies around the world have reported that hepatitis viruses and human immunodeficiency virus (HIV) are the main pathogens for most cases of occupationally acquired blood-borne infection. Consequently, this study aims to investigate the prevalence of hepatitis B virus (HBV), hepatitis C virus (HCV), hepatitis E virus (HEV), and HIV among Mexican dentists. **Material and methods.** We included 159 dental HCWs who attended the annual meeting in Medica Sur Clinic and Foundation held in Mexico City on May 2016. Through a

cross-sectional study, we identified the prevalence of anti-HBV, anti-HCV and anti-VIH antibodies by ELISA method. Likewise, by ELISA method, we used recombinant target antigens to detect IgG and IgM anti-HEV of HEV genotype 1 and 3 with positive values > 2.2 IU/mL. A survey was applied in order to obtain data of occupational exposure to blood-borne viruses. **Results.** Two dentists (1.2%) were positive for antibodies against HCV antigen, only one (0.6%) was positive for antibodies against HBV antigen and three (1.8%) were positive for the detection of IgG antibodies against HEV. Two cases were positive for antibodies against HIV. In relation to accidental exposures to body fluids, the group that practiced more than twenty years had more accidental exposures in more than two years (57%) compared to group which practiced ten to twenty years (28%) (p = 0.031). **Conclusions.** The infection by HEV was the most prevalent among dentists. However, we found that prevalence of BBV in dental HCWs was similar to that of the general population. The high rates of disease transmission are probably associated with non-adherence to infection prevention and control recommendations in dental settings.

99 CARTEL
HIGH PREVALENCE OF VIRAL HEPATITIS AND HIV IN A LOW INCOME POPULATION IN WEST MEXICO

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Introduction. Recently it has been shown that the Mexican population with low socioeconomic resources has a high prevalence of infection with hepatitis B virus (HBV). The use of only HBsAg in routine exams prevents the diagnosis of non-active hepatitis or occult hepatitis B. Also it limits the diagnosis of HBV/HIV or HBV/HCV co-infection. **Objetive.** To determine the seroprevalence of HCV, HBV and HIV in patients of the Hospital Civil de Guadalajara "Fray Antonio Alcalde" (AHC-FAA), and the APRI index in patients seropositive and seronegative to the indicated viruses. **Material and methods.** In a retrospective and observational study, 10,895 serological samples performed from March 1, 2016 to March 1, 2017 were analyzed. Of these, 8,200 were serology for HCV, 8,248 for HBV and 7735 for HIV. Repeated serologies were not included in the same patient. The APRI index was analyzed in 322 patients with positive serologies, and 1,852 with negative serologies. The AST reference value for the APRI index was ≥ 40 IU/L. **Results.** The seroprevalence for HCV was 3.7% (n = 304), HBV 0.96% (n = 80) and for HIV 2.7% (n = 210). The average age for HCV was 43 ± 18 years and 35 ± 17 years for HBV and HIV. The male / female ratio was 2.13 for HCV, 6.27 for HBV and 4.0 for patients with HIV. The APRI index (F2 to F4) for seropositives was 49.3% (n = 74) for HCV, 29.9% (n = 16) for HBV and 24.6% (n = 29) for HIV while in patients with negative serology was 14.4% (n = 266). **Conclusions.** In patients who attend the AHC-FAA with low socioeconomic resources, the seroprevalence for HCV, HBV and HIV is higher than reported in the general population. The values of the APRI index in seronegative patients suggest that HBV infection as well as co-infections could be underdiagnosed. Viral hepatitis B and C as well as HIV are far from decreasing, instead they remain the same or may be increasing.

107 CARTEL
TREATMENT EFFECTIVENES WITH SOFOSBUVIR-LEDIPASVIR + RIBAVIRIN IN PATIENTS GENOTYPE 1 AND ADVANCED FIBROSIS: REAL LIFE STUDY

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Introduction. Hepatitis C virus infection is one of the main causes of chronic liver disease around the world, in Mexico the prevalence is 3-5%. The treatment has evolved substantially with the Direct Action Antivirals and the Sustained Viral Response week 12 (SVR12) is 96-97% in patients with compensated cirrhosis genotype 1. **Objective.** Describe the results of the treatment with sofosbuvir - ledipasvir + ribavirin in patients with chronic hepatitis C genotype 1 and advanced fibrosis. **Material and methods.** Thirteen patients with chronic hepatitis C were selected in the period from May 18 to June 18, 2017. Inclusion criteria was: 1. Signature of informed consent. 2. Men and women older 18 years. 3. Fibrosis F3-F4 by liver biopsy, elastography or APRI. 4. Genotype 1a-1b. 5. Experienced (know the details of the previous treatment) or virgins to treatment. 6. Ultrasound of the abdomen 6 months before starting treatment. 7. AgsHb -VIH negative. 8. Use of family planning method. They received 12 weeks of treatment based on sofosbuvir 400 mg-ledipasvir 90 mg 1 tablet every 24 h + ribavirin (according to the current guide at the time of selection). The basal viral load was determined at the end of treatment and 12 weeks after finishing treatment (SVR 12), real-time PCR method- ABBOTT m2000 system and ABBOTT Real Time HCV test kit (molecular ABBOTT) < 12 IU / mL. For the statistical analysis, Student's t-test and χ^2 were used. **Results.** 76% corresponded to genotype 1b, 24% genotype 1a. 46% of the patients had a degree of fibrosis F3 and 54% F4. 54% were women and 46% men. All patients achieved SVR12. The most common complication was anemia associated with the use of ribavirin and was treated with a decrease in the dose (800 mg). **Conclusions.** Treatment with sofosbuvir -ledipasvir + ribavirin for 12 weeks is 100% effective in patients with advanced fibrosis regardless of the response to previous treatment. The decrease in the dose of ribavirin had no impact on SVR 12.

110 CARTEL
LEUKOPENIA AS EXTRAHEPATIC MANIFESTATION OF INFECTION WITH VIRUS OF HEPATITIS C (HCV)

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Introduction. Leukopenia (< 400 x 10^9 / L) in HCV infection is a manifestation with complex physiopathology of multifactorial order, of which very little is known. It is believed that gran-

ulocyte colony stimulating factor (G-CSF) or macrophage colony stimulating factor (GM-CSF) both have an implicit role. There are studies that show that treatment with GM-CSF for 7 days in patients with cirrhosis and leukopenia resulted in an increase in the WBC count. Another factor is the suppression of the bone marrow as a result of spinal hypoplasia. Finally, it has been studied that HCV is not only capable of infecting hepatocytes, but also peripheral blood mononuclear cells (PBMC). The presence of HCV in its replicative form in PBMC suggests that these cells can be a reservoir capable of reinfecting the liver in transplant patients or those treated with interferon (IFN). All this has significance as a factor independent of the clinical stage of the disease. The objective of this study is to demonstrate the association between HCV infection and leukopenia as an early marker of the disease. **Material and methods.** Retrospective study in which clinical files of patients diagnosed with HCV infection are analyzed in the period of 01/6/2016 to 1/31/2018, in which the leukocyte figures were corroborated at the time of diagnosis and after treatment with direct antiviral therapy. The samples were analyzed with the statistical program SPSS version v22. **Results.** We reviewed 45 records of patients with positive serology for HCV of whom 11 were discarded for not receiving treatment. The average age was 60.2 years (29-88), 23% (8) of the male sex and 77% (27) of the female gender. 46% were enrolled with stage F4 of the metavir scale. An increase in leukocyte numbers was observed when reaching a sustained viral response (p 0.02), however there is no direct correlation between the viral load and the leukocyte numbers. There is no statistically significant difference between the degree of fibrosis and leukopenia. **Conclusions.** The immunological mechanisms associated with viral infections, with possible direct cytotoxicity on neutrophils, can manifest with leukopenia in patients infected with HVC, with an improvement in leukocyte levels after treatment. However, prospective studies and further immunovirology are required.
Conflicts of interests: We declare for the presentation of this work there are no conflicts of interest.

111 CARTEL
VIRUS OF HEPATITIS C, GENOTYPE 6 IN MEXICO: CASE REPORT

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Clinical report. A 42-year-old male, originally from Beijing, resides at Estado de México 15 years ago. Important background: positive drug addiction, 20 years ago, intravenous heroin, currently suspended. By annual medical review, he went with a physician who requested laboratory tests. Denies weight loss. EF TA 110/70 mmhg fc 70 fr 16 weight 60 kg size 1.70 cm alert, adequate hydration and mucotegumentary coloration. Cardiopulmonary without commitment. Soft abdomen, depressible normoperistalsis no data of peritoneal irritation. Laboratories (Oct 2017): Alb4.6 Biltot0.38 Bun17.3 Cr0.83 Hb13.3 Hct40.1 Plaqs269. Viral load of hepatitis C RTPCR (4976483 log 6) 6th genotype. Therefore, antiviral treatment was initiated on the basis of Harvoni (sofosbuvir 400 mg/ledivaspir 90 mg) + ribavirin 1,000 mg for 12 weeks. The viral load at week 12 was undetectable. **Introduction.** As a global health problem, it is estimated that 2.5% of the world population is infected with Hepatitis C (HCV). Taxonomically, HCV is classified into seven confirmed genotypes. Different genotypes have shown different patterns of geographical distribution. Genotypes 1, 2 and 3 are prevalent throughout the world, while genotype 6 is endemic to Southeast Asia. In Mexico, the prevalence is estimated at 1.4%. In the northern border there is up to 2%, considered so by the greater exposure to intravenous drugs, the most common current route of contamination. Up to now, genotype 6 in Mexico has not been considered. In an epidemiological study, genotype 1 was reported as the most prevalent, with 72.2%, followed by genotype 2: 18% and genotype 3 by 9.8%. However, these trends are constantly evolving as a result of rapid transmission through international travel. **Conclusions.** The current therapeutics of HCV has revolutionized the health landscape, contemplating the goal of ending the virus worldwide. However, the socioeconomic barrier still seems difficult to cross. Globalization is changing the epidemiological landscape in Mexico. It is a priority, a timely detection in risk population as well as grant an effective treatment.

113 CARTEL
UTILITY OF APRI AND FIB-4 ON HEPATIC FIBROSIS F1-F2 MEASUREMENT ON PATIENTS WITH HEPATITIS C VIRUS INFECTION CANDIDATES TO DIRECT ACTING ANTIVIRAL TREATMENT

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Introduction. Hepatic fibrosis is one of the changes that appear on patients chronically infected with hepatitis C virus. Hepatic biopsy was considered the reference method for this evaluation, however in the last few years there has been an increased interest on the non-invasive methods for staging. Transient elastography (Fibroscan) makes liver stiffness measurements with an 87% sensitivity and 91% specificity with measures of 12.5 indicating cirrhosis. The AST/platelet ratio (APRI) > 1.0 is able to predict cirrhosis with a 76% sensitivity and 72% specificity. Stablishing a 2.0 cut-off point showed higher specificity (91%) but lower sensitivity (46%). The FIB-4 index takes in count platelet count, ALT, AST, and age stablishing a 2.2 cut-off point to identify significant fibrosis with 65% sensitivity and 69% specificity. **Objective.** Correlate F1-F2 grades of hepatic fibrosis obtained by ultrasonic transient elastography with APRI and FIB-4 index. **Material and methods.** A transversal, observational, retrospective study. 215 patients diagnosed with hepatitis C virus infection between August 8, 2017 and February 15, 2018 were included. Fibroscan was performed, with Controlled Attenuation Parameter (CAP) measurement, APRI and FIB-4 index were calculated. Statistical analysis was held with the Pearson correlation coefficient and Spearman correlation coefficient. **Results.** Correlation between

FIB-4 and fibrosis in its ordinal form by stages was documented. Spearman correlation coefficient 0.576, $p < 0.0001$. There's significant correlation between FIB-4 and fibrosis (kilopascals) on its continuous form, Pearson correlation coefficient 0.422, $p < 0.0001$. Regarding the continuous variable APRI and fibrosis, correlation was found, Pearson correlation coefficient 0.257 and $p < 0.0001$. APRI and fibrosis by stages showed correlation, Spearman correlation coefficient 0.600 and $p < 0.0001$. There is an inverse correlation between fibrosis staging and CAP measured steatosis. **Conclusions.** The measurements gathered by Fibroscan stage F1-F2 correlates with FIB-4 index and APRI, not only at stage F4. Patients with higher grade of fibrosis showed less hepatic steatosis.

130 CARTEL
ANALYSIS OF CXCL-9, IL-29 IN PATIENTS WITH CHRONIC HEPATITIS C

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Introduction. The CXCL-9, CXCL-10 y CXCL-11are Chemokines that play an important role in chronic infection-with hepatitis C virus (HCV), as they drive the recruitment of lymphocytes to the liver. The intrahepatic and peripheral levels of these chemokines are elevated in chronic hepatitis C in patients, with high levels of liver infection and in degree of fibrosis. In HCC the production of cytokines thatIL-29 and CXCL-9 is stimulated. **Objective.** Determination of the serum concentration of IL-29 and CXCL-9 in patients with HCC compared with a control group. **Material and methods.** A cross-sectional, prospective, observational and descriptive study was carried out. Patients with compensated HCC and controls of both sex were included. Prior consent, a 10 mL of-blood sample was taken and IL-29 and CXCL-9 were determined with Luminex technology (Biorad,EU); Data were analyzed by Kruskall-Wallis, statistically significant differences were considered from $p < 0.05$. **Results.** 105 patients and 100 controls were studied. The average of age was 51.3 ± 12.2 and 36.6 ± 10.3 years, the BMI of 26.5 ± 3.5; 28.3 ± 4.2; respectively. The IL-29 values expressed as median (min-max) were 195.3 (91.7 - 735.1) and 195.3 (0.02 - 735.8) pg/mL, to CXCL-9 were 2238.3 (48.8 - 14977.2) and 1105.7 (42.1 - 100205.0) pg/mL; respectively. There was difference between groups in CXCL9 ($p = 0.0001$). **Conclusions.** The levels of IL-29 in patients and controls have similar concentrations, the HCV does not have effect in IL-29. The concentration of CXCL-9 was higher in patients than in controls, which suggests that this molecule is key in the inflammatory process, perpetuating the damage in these patients.

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134 CARTEL
ASSOCIATION OF FIBROSIS AND HEPATIC STEATOSIS IN PATIENTS WITH CHRONIC HEPATITIS C ASSESSED BY TRANSIENT ELASTOGRAPHY AND CONTROLLED ATTENUATION PARAMETER (CAP)

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Introduction. Hepatic steatosis is frequent in patients with chronic hepatitis C (HCVC), due to genetic, environmental and viral factors and comorbidities of the host. Hepatic steatosis has been considered as a co-factor of fibrosis progression in this group. By means of transient elastography (FibroScan) and controlled attenuation parameter (CAP) measurement, the presence of steatosis and fibrosis can be estimated. **Objective.** Report the association of fibrosis and steatosis in patients with HCVC assessed by FibroScan and CAP, and the association with metabolic factors. **Material and methods.** Analytical and retrospective cross-sectional study. Patients with HCVC who underwent FibroScan were included, measuring CAP with cut-off of 268 dB/m to determine the presence of steatosis and 12 kPa for significant fibrosis (F3 - F4), considering variables such as age, dyslipidemia, diabetes mellitus (DM) and obesity. **Results.** 73 patients were included, 51 women and 22 men, average age 57 years. 70% genotype 1, 12.8% genotype 2 and 2.85% genotype 3. 58.3% non-responders to Peginterferon/Ribavirin, 15.2% with sustained virological response to the same treatment and 13.8% naive. Of the total patients, 45.3% had steatosis, 32.8% significant fibrosis (F3-F4), 8.2% DM, 19.2% dyslipidemia and 32.9% obesity. Of the group with significant fibrosis, 50% presented steatosis, of which 43% presented obesity, 6.2% dyslipidemia and none DM. No significant association of the parameters evaluated with the presence of fibrosis was found. Quantitative analysis by Chi square. **Conclusion.** In this study, 50% of patients with F3-F4 presented steatosis according to CAP, without statistically significant association with the degree of fibrosis. Since most of the patients in this group have viral replication and will be treated, we have to consider the high incidence of steatosis and obesity in the group of patients with fibrosis and we suggest implementing weight reduction strategies and follow up on these patients after antiviral therapy.

This work was not sponsored.

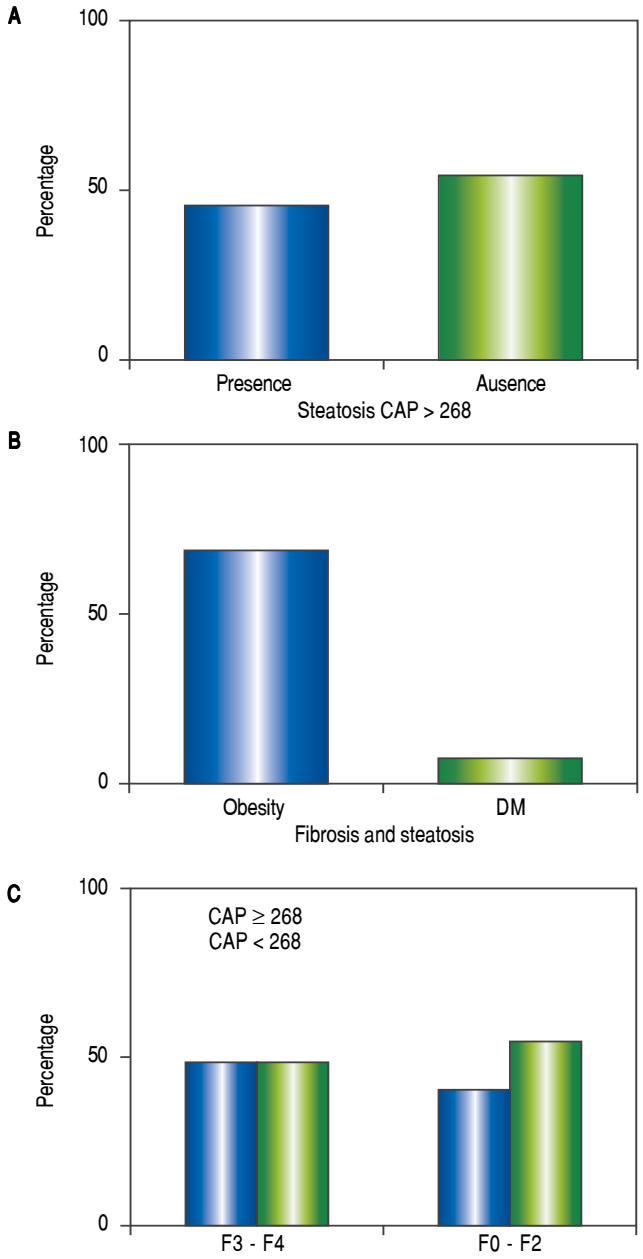

Figure 1 (IV.134).

135 CARTEL
ASSOCIATION OF TRANSIENT ELASTROGRAPHY WITH THE PRESENCE AND SIZE OF ESOPHAGEAL VARICES IN PATIENTS WITH CHRONIC VHC LIVER DISEASE. PRELIMINARY REPORT

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Introduction. Transient elastography (FibroScan) is a useful tool to assess the degree of fibrosis in patients with chronic liver disease. Recently it has been proposed that the hepatic stiffness measured by this method can correlate with the degree of portal hypertension and predict the presence of esophageal varices. **Objective.** To evaluate the correlation between the presence and size of esophageal varices with the degree of fibrosis by Fibroscan in patients with HCV liver disease. **Material and methods.** A retrospective study was conducted in patients with chronic HCV liver disease in evaluation for antiviral therapy, who had endoscopy and FibroScan with significant fibrosis (> 12 kPa), in the period from March to December 2017. It was taken as cut-off point 20 kPa to see if the degree of fibrosis correlates with the size and presence of esophageal varices, by means of logistic regression analysis. **Results.** Fourty-two patients were included, with an average age of 58.5 years, 30 women and 12 men. 22 without esophageal varices and 20 with esophageal varices, most with small esophageal varices. 24 patients (57.1%) had FibroScan less than 20 kPa and 18 patients (42.9%) greater than 20 kPa. Of the patients with Fibroscan < 20 kPa, 50% had esophageal varices, including 2 patients with large varicose veins. Of the patients with Fibroscan > 20 kPa, 55% did not have esophageal varices and 45% had esophageal varices, more than 80% were small esophageal varices. No statistically significant correlation was found in the degree of liver stiffness with the presence and size of the esophageal varices. **Conclusion.** In our study population there was no significant association between the stage of fibrosis and the presence, absence or size of esophageal varices. We suggest performing endoscopy to detect esophageal varices in patients who have Fibroscan > 12 kPa.

136 CARTEL
PIRFENIDONE DECREASES TGβ1 mRNA AND HCV-RNA IN THE SUBGENOMIC REPLICON JFH1 CELLS

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Background. HCV is the main cause of chronic liver diseases over the world. Treatment with direct acting antiviral drugs has been improved considerably but the cost is still very high. **Material and methods.** JFH1 cells cells were maintained in DMEM medium supplemented with 10% FSB and G418 at 500 μg/mL. A time and dose response curve was prepared with PFD at 100, 500 and 1000 μm/mL. Viral replication was evalu-

ated at 4, 8, 12 and 24 hours. *TGFβ1*, *CTGF*, and *NOS2* gene expression was evaluated with PFD at a dose of 100 μg/mL alone or combined with 100 IU interferon β1a (IFNβ1a). **Results.** HCV-RNA was reduced 1.4 and 3.1 times with 100 μg/mL of PFD and 100 IU of IFNβ1a treatment, respectively. The antiviral response was not improved when PFD was combined with IFNβ1a. *TGFβ1* and *CTGF* expression was reduced 1.4 and 1.2 times respectively with PFD treatment and these genes were increased 1.75 and 2.3 respectively with the IFNβ1a treatment. These increases were not returned to normal values when PFD was combined with IFNβ1a treatment. *NOS2* gene expression was not affected by PFD treatment alone and was enhanced 4 times with IFNβ1a treatment. The combined treatment affected more the increase related with *NOS2* gene expression (20 times). **Conclusion.** PFD treatment (100 μg/mL at 12 h) in JFH1 subgenomic cells had a mild reduction on HCV-RNA and on the profibrogenic *TGFβ1* mRNA. PFD combined with IFNβ1a treatment must be carefully taken since in this model did not improve the reduction in the viral replication nor in the antifibrotic gene expression. Also, the cellular stress could be affected due to the higher levels of *NOS2* gene expression observed with this combined treatment. Experiments with a new pharmaceutical formulation (prolonged-release pirfenidone) are currently underway.

127 CARTEL
EPIDEMIOLOGICAL AND SITUATIONAL PANORAMA OF HEPATITIS C IN THE INSTITUTO MEXICANO DEL SEGURO SOCIAL (IMSS)

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Introduction and objectives. The hepatitis C virus (HCV) has been the cause of major liver disease worldwide, due to its medical, epidemiological and economic impact. The IMSS began in 2017 the development of an Integral Attention Model, which allows to know the epidemiological and situational panorama, in order to identify effective strategies and actions for the detection, diagnosis and effective treatment, through the use of direct action antivirals in the population entitled. **Material and methods.** Candidate patients were included in a platform specifically designed for the care of patients with hepatitis C between June 2017 and January 2018, with genotype 1 and 4, in the geographic areas of Mexico City, Baja California, Monterrey, Guadalajara, Tamaulipas, Mérida and Puebla. Systematized information on demographic and biochemical variables was obtained. **Results.** Cohort (n = 992), the prevalence of genotype 1a was 54%, for genotype 1b 45% and genotype 4 1%. Risk factors for infection: transfusions (54%), surgeries (14%). The age range is from 16 to 85 years, average of 55 years, female *vs.* male (58% *vs*. 42%). 24% have systemic arterial hypertension, 18% diabetes mellitus and 9% both, while 4% have HIV confection. 29.6% have normal weight, 41.9% overweight, 19.6% obesity grade 1, 3.9% obesity grade 2 and 1.2% obesity grade 3. Fibrosis assessed by elastography, F0 (20%), F1 (6%), F2 (5%), F3 (12%) and F4 (57%). Regarding Child-Pugh, 44% have Child A, 13% have Child B, 2% correspond to Child C, 42% of the population did not have cirrhosis. In 99% of the cases no extra hepatic manifestations were identified. In liver transplantation there is 2.7%, 1.3% with hemophilia and 0.8% with renal failure. Regarding the history of response to treatment, 56% are non-responders, 13% with relapse and 30% are naïve cases. **Conclusions.** The present analysis has allowed us to identify the epidemiological and situational panorama of our population in order to implement the most effective strategies and lines of action in order to give an effective treatment.

V. PEDIATRIC HEPATOLOGY

05 CARTEL
HIGH FRUCTOSE CONSUMPTION IS ASSOCIATED WITH INSULIN RESISTANCE IN CHILDREN OF MEXICO CITY

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Background. Sugar-rich diets, particularly the high consumption of fructose in animal models and adult humans, have been associated with insulin resistance and other metabolic alterations, being this little explored in children. **Aim.** To evaluate the association between fructose consumption and insulin resistance in children in Mexico City. **Material and methods.** Cross-sectional study with 1294 children aged 6 to 12 years residing in Mexico City; several anthropometric measurements were taken and a questionnaire was applied to obtain socio-economic, demographic, personal pathological and heredofamily data, and physical activity data were obtained, as well as the sampling of fasting venous blood samples. The HOMA index was calculated as an indicator of insulin resistance. Through a questionnaire of frequency of semi-quantitative food consumption of 107 foods, the consumption of fructose, other simple sugars and other macronutrients of each individual was calculated and adjusted for energy through the nutrient density method. The association of fructose consumption with insulin resistance and other metabolic markers was evaluated using linear regression models adjusted for confounding variables and by means of path analysis variables of mediation were detected. **Results.** High fructose consumption was positively associated with the HOMA index [βT3 *vs.* T1 = 0.32 (95% CI: 0.08, 0.56, p < 0.01)], but not the rest of the simple sugars such as glucose. In addition, industrialized sweet drinks were identified as the food group that mostly contributed to the consumption of fructose in this population. However, no statistically significant association was found between the consumption of fructose and the

alterations of other biochemical parameters such as total cholesterol, LDL, HDL and triglycerides. **Conclusions.** Our results suggest a harmful association between high fructose consumption with the risk of presenting insulin resistance. However, more evidence from longitudinal studies in this population are necessary to confirm our findings.
Conflicts of interest. The authors have no conflicts of interest. The study was supported by the National Council of Sciences and Technology (CONACYT).

33 CARTEL
CLINICAL CHARACTERISTICS AND OUTCOME OF PATIENTS WITH COLANGITIS AND CHRONIC HEPATIC DISEASE IN A TERTIARY REFERRAL PEDIATRIC HOSPITAL

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Background and aim. In children with biliary atresia (BA) after Kasai procedure (KP) , acute colangitis is the most commun complication, with a high morbility and mortality, besides the deterioration of survival rate, before hepatic transplant. The aim is to describe the clinical characteristics and outcome of pediatric patients with cholangitis and chronic liver disease (CHD) in a third level Pediatric Hospital. **Material and methods.** Descriptive cohort. Review of records of hospitalized patients with diagnosis of cholangitis and chronic liver disease from January 2011 to December 2016. **Results.** In the stipulated period, 27 patients with diagnosis of cholangitis were treated, all with CHD; 77.7% of them were secondary to BA. KP was performed in 55.5% of the patients, with an average age of 3.4 months. The total number of cholangitis events was 48, with an average of 1.77 episodes per patient (1-8). The clinical presentation was determined: fever (97.9%), increase in abdominal perimeter (56.2%), abdominal pain (43.7%), and others in a lower percentage. In 81.2% of the episodes of cholangitis, it was not isolated in blood cultures any microorganism. The average number of days with antibiotic coverage was 11.02 (4-33). 87.5% of the

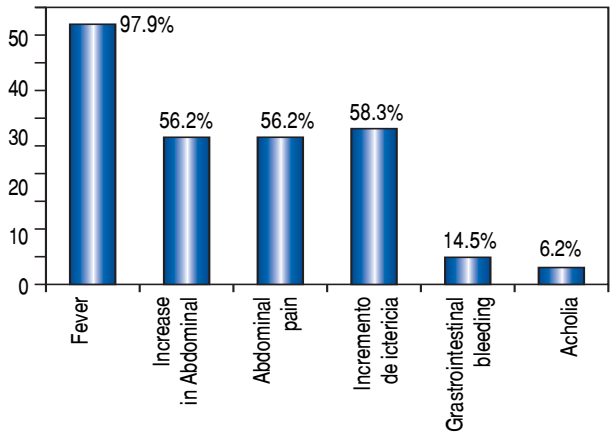

Figure 1 (V.33). *Frequency of signs and sypmtoms of cholangitis.*

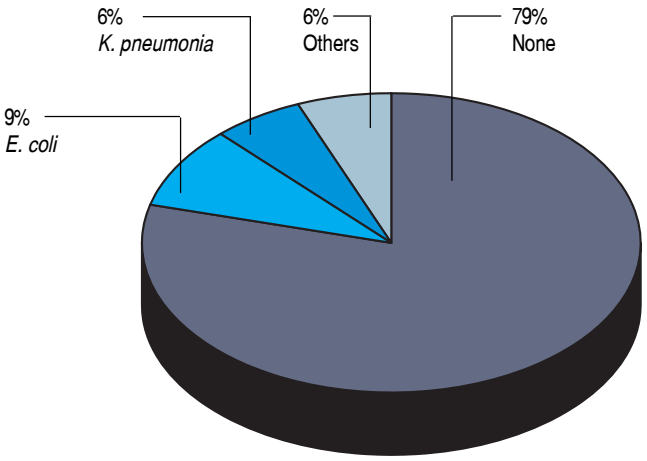

Figure 2 (V. 33). *Frequency of microbiological isolations.*

patients did not present complications associated with a cholangitis event; however 4.16% presented peritonitis, 4.1% developed liver abscesses and 2.08% disseminated intravascular coagulation. 33.3% of the patients studied, died of sepsis associated with an acute cholangitis event. **Conclusions.** In Mexico, there are few studies in relation to cholangitis and CHD, and given the importance of deterioration in the prognosis and survival of patients with each colangitis episode, it is necessary to have in-depth knowledge of the clinical manifestations and outcomes to establish a diagnosis and timely treatment.

63 CARTEL
CHOLEDOCHAL CYSTS IN PEDIATRICS: AGE OF PRESENTATION, CLINICAL MANIFESTATIONS AND EVOLUTION

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Background and aim. Choledochal cysts are a congenital disorder of the common bile duct that can cause progressive biliary obstruction and biliary cirrhosis. The estimated incidence in western countries varies between 1 in 100,000 and 1 in 150,000. The incidence is high in Asia and occurs more in women, with a male-female ratio 1:3-4. **Aim.** To describe the clinical manifestations and evolution of patients diagnosed with choledochal cyst. **Material and methods.** A descriptive, retrospective, cross-sectional study included patients diagnosed with choledochal cyst in the 2013-2017 period. Patients with a complete clinical record were included. **Results.** Twenty-four patients with diagnosis of choledochal cyst were identified, the most frequent age of presentation was in female infants, 18 (75%) women, 6 men (25%), 3:1 ratio, the main symptoms were jaundice (66.6%) and abdominal pain (45.8%). The diagnosis in 100% of the patients was performed by ultrasound, the most common choledochal cyst was type I, according to the Todani classification, the largest that was resected was 15 cm. The 24 patients underwent biliodigestive diversion in Y de Roux, 13 patients underwent liver biopsy, 84.6% presented fibrosis and

15.3% cirrhosis. The complications presented after 1 year of follow-up were: stenosis of the biliodigestive bypass which manifested itself with 3 events of cholangitis, intestinal occlusion and pancreatitis. **Conclusions.** The most frequent age group at the time of diagnosis were infants, less frequent neonatal age, female sex was the most frequent as reported in the literature, the main symptoms were jaundice and abdominal pain, the surgical procedure was performed in the first 6 months of having started the clinical picture. In the first year of follow-up there was a favorable evolution in 21 patients, with no complications, and only 15.3% of the patients presented cirrhosis.

VI. ALCOHOLIC LIVER DISEASE AND FATTY LIVER

07 CARTEL CORRELATION OF STEATOSIS AND LEVELS OF AMINOTRANSFERASE IN PATIENTS WITH MORBID OBESITY

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Background and aim. Obesity correlates with non-alcoholic fatty liver disease and occurs between 90% to 100% of severely obese individuals (body mass index > 35 kg/m^2), despite severe steatosis some patients do not increase aminotransferase levels. **Material and methods.** It is a case series study of patients with morbid obesity (before bariatric surgery) who attended the Liver Clinic, the degree of fibrosis was estimated by transient elastography and correlated with BMI. For the statistical analysis, Spearman's Rho correlation was calculated. We analyzed the correlation between the degree of hepatic steatosis and the increase of aminotransferases in patients with morbid obesity who underwent transient elastography (FibroScan®) as a pre-operative bariatric surgery protocol. **Results.** We included 31 patients, 22 women (70%) and 9 men (30%), weight 133.2 ± 31.4, size 162 ± 8.88 cm, BMI 50.52 ± 8.56 kg/m^2, CAP 371 ± 37.8, IQR 21.05 ± 12.2 (steatosis grade III in all patients representing > 10% of fat in liver), AST 31 ± 11, ALT 35 ± 10.3, Pearson correlation for AST 0.199 and ALT 0.350. **Conclusions.** In our group of patients with morbid obesity and severe steatosis we found some with normal aminotransferase levels that may be related to the healthy obese, or we have to decrease the normal levels of liver enzymes, the enzyme that most correlated was AST. Although all patients with morbid obesity have grade III of steatosis, the aminotransferases remained within the normal range, there is no correlation between the degree of steatosis and aminotransferase levels in our group.
This work has not been sponsored totally or partially by any governmental or commercial system.

08 CARTEL TRANSIENT ELASTOGRAPHY IN PATIENTS WITH MORBID OBESITY, FINDINGS OF FIBROSIS AND STEATOSIS

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Background and aim. Obesity in related to the development of steatosis and hepatic fibrosis. Transient elastography (TE) is a useful non-invasive method to evaluate these complications. This is considered valid if a) the interquartile rang (IQR) is < 30, b) a success rate > 60% (valid between all measurements). Much as 25% of morbidly obese in the TE cannot be performed since there is no suitable place to obtain the measurement. The objective of the study is to describe the findings of the TE in patients with morbid obesity. **Material and methods.** It is a case series study involving patients with a (BMI) body mass index > 40 in whom a TE was performed. **Results.** We included 31 patients: 22 women (70%), 28 patients met the criteria of validity. Valid patients presented the following variables: weight 133.2 ± 31.4 kg, size 162 ± 8. 88 cm, MBI 50.52 ± 8.56 kg/m^2, Kpa 17.90 ± 7. 2, IQR 5.2 ± 5. 2, grade of fibrosis 2.2 ± 1. 4, CAP 371 ± 37.8, IQR 21.05 ± 12.2. 75% success rate (60% to 100% range). The degree of steatosis was III in 100% of patients, 5 patients (17%) had no fibrosis, 9 mild fibrosis (32%) 14 (50%) advanced fibrosis. **Conclusions.** The results of steatosis and fibrosis are congruent. 90% of the patients reported one IQR less than 20 and success rate of greater than 60% that validates the study, the frequency of advanced fibrosis and steatosis is high.
This work has not been sponsored totally or partially by any governmental or commercial system.

09 CARTEL CORRELATION BETWEEN BODY MASS INDEX AND GRADE OF FIBROSIS IN PATIENTS WITH MORBID OBESITY

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Background and aim. Obesity is associated with non-alcoholic fatty liver, occurs between 90 to 100% of severely obese individuals (body mass index > 35 kg/m^2), with development of non-alcoholic steatohepatitis and progression to hepatic fibrosis. Not all patients with fatty liver progress to the following stages. We analyzed the correlation between the degree of body mass index and the development of liver fibrosis in some grade in patients with morbid obesity who underwent transient elastography (FibroScan®) as a pre-operative bariatric surgery protocol. **Material and methods.** It is a case series study of patients with morbid obesity (before bariatric surgery) who attended the Liver Clinic, the grade of fibrosis was estimated by transient elastography and correlated with BMI. For the statistical analysis, Spearman's Rho correlation was calculated. **Results.** We included 31 patients, 22 women (70%) and 9 men (30%), weight 133.2 ±

31.4 kg, size 162 ± 8.88 cm, BMI 50.52 ± 8.56 Kg / m^2, CAP 371 ± 37.8, IQR 21.05 ± 12.2, (steatosis grade III in all patients) Kpa 17.90 ± 7.2, IQR 5.2 ± 5.2, grade of fibrosis 2.2 ± 1.4. Rho of Spearman 0.765 with a p = 0.000 (significant). **Conclusions.** In our group of patients there is a very important correlation between the grade of obesity and the presence of liver fibrosis, which confirms that severe hepatic steatosis progresses to fibrosis, including advanced fibrosis. The degree of fibrosis is correlated with the body mass index, in such a way that obesity represents an important risk factor for the development of hepatic fibrosis.

This work has not been sponsored totally or partially by any governmental or commercial system.

18 CARTEL
CONCORDANCE OF STEATOSIS AND FIBROSIS IN THREE DIFFERENT AREAS OF THE SAME PATIENT EVALUATED BY TRANSITIONAL ELASTOGRAPHY

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Introduction. The diagnosis of fibrosis and steatosis by non-invasive techniques (radiological) is frequent. The distribution of the hepatic fibrosis is heterogeneous, we can find areas without and some areas with advanced fibrosis in the same liver. The biopsy is not often used because of its risks and complications. Transient elastography is a method that has up to 85% sensitivity, evaluating up to 3 cm^2 of liver tissue. **Objective.** To evaluate the concordance of steatosis and fibrosis in different areas of the same liver. **Material and methods.** 36 patients with chronic liver disease were included, transient elastography was performed in three different areas. The measurements were transformed into equivalent values in S0-S3 (steatosis) and F0-F4 (fibrosis). Kendall's Tau-b correlations were performed to evaluate the relationship between the measurements and the Kappa coefficient for agreement. A value of $p < 0.05$ was considered significant. **Results.** 36 patients were included, 17 women, 19 men. With an average age of 54.1 ± 13.8 years. The most common etiology was NASH. In steatosis, a significant correlation was found according to the Kendall Tau coefficient between the measurement points ($p < 0.001$): 1st and 2nd moderate T = 0.460; 1st and 3rd moderate T = 0.540; 2nd and 3rd moderate T = 0.466. The value of agreement with the Kappa coefficient was significant in all the comparisons ($p < 0.001$): acceptable between 1st and 2nd k = 0.259; acceptable between 2nd and 3rd k = 0.232, and moderate between 1st and 3rd k = 0.409. For fibrosis, Kendall's Tau correlations were also significant ($p < 0.001$): 1st and 2nd moderate T = 0.543; 1st and 3rd highest and considerable T = 0.771; 2nd and 3rd moderate T = 0.482. The concordance value (Kappa coefficient) was significant in all the comparisons ($p < 0.001$): acceptable between 1st and 2nd k = 0.279; moderate between 1st and 3rd k = 0.487, and moderate between 2nd and 3rd k = 0.350. **Conclusions.** Variability was demonstrated between the three different points that confirm that the lesion (steatosis/fibrosis) appears heterogeneously in the liver. The degree of steatosis has greater concordance than the degree of fibrosis. The diagnosis of the stage of steatosis and fibrosis should always be evaluated with clinical data.

21 CARTEL
STADIFICATION OF THE FIBROMAX TEST (NASHTEST, FIBROTEST, ACTITEST, ASHTEST, STEATOTEST) IN PATIENTS WITH DIAGNOSIS OF STEATOSIS AND NASH IN A LIVER UNIT

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Background and aim. Non-alcoholic fatty liver disease (NAFLD) is associated with metabolic causes like type 2 diabetes mellitus, obesity, insulin resistance, high blood pressure and dyslipidemia. Non-invasive predictive tests such as FibroMax decrease the use of liver biopsy and assess damage in the variants of NAFLD: steatosis and Non-alcoholic Steatohepatitis (NASH). **Objective.** To evaluate the stratification of FibroMax test (NashTest, FibroTest, ActiTest, AshTest, SteatoTest) in patients with diagnosis of steatosis and NASH. **Material and methods.** Retrospective study of 83 patients with diagnosis of NASH and steatosis during the period of august 2015- december 2017. Fibromax™ (BioPredictive) was made with a blood sample of patients with fasting of 12 h measuring biochemical parameters and analyzing them with characteristics of the patients. The results were analyzed with the developer's system to evaluate hepatic steatosis (SteatoTest), necroinflamatory activity (ActiTest) liver inflammation (AshTest and NashTest) and fibrosis (FibroTest). A database was created in Microsoft Excel and analyzed with GraphPad Prism 7. **Results.** In NashTest the patients with steatosis were classified 36.14% as N1, in NASH 45.7% corresponded to N1 and 15.6% N2. Female gender with NASH showed more activity in N2 (13.25%). In AshTest, the patients with steatosis were classified 2.4% as H1 and in NASH 10.84% lead to H1 stage and 3.61% to H2. SteatoTest results showed that 22.87% of the patients with steatosis showed severe activity, compared to 44.57% of NASH. The female gender with NASH showed 12% in S2 stages compared to 6% of males. AshTest of NASH group showed 23.07% of patients in stages of severe necroinflamatory activity in comparison with 6.45% of steatosis. Gender results were 23.07% of males and 11.36% of females in the severe necroinflamatory stage. FibroTest of EHNA patients showed 59.68% with moderate/advanced levels of fibrosis, compared to 9.6% of steatosis. By gender, 53.8% of males showed severe stage of fibrosis and female 34.09%. **Conclusions.** The patients with NASH showed higher statification grades in NashTest, SteatoTest and FibroTest in comparison with the steatosis group, associated with an advanced hepatic disease. Regarding the gender, females showed higher inflammatory levels of the liver (NashTest) associated with steatosis.

This work has been totally funded by Liver Unit.

29 CARTEL
CORRELATION BETWEEN LIVER FIBROSIS AND STEATOSIS DUE TO NON-ALCOHOLIC FATTY LIVER DISEASE IN MEXICAN OBESE AND OVERWIGHT PEDIATRIC PATIENTS

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Background. In the Mexican National Health and Nutrition survey (2016) , the prevalence of overweight and obesity in children and teenagers was estimated, in children 3 out of 10 are overweight or obese, while in teenagers almost 4 out of 10. According to the European Society of Gastroenterology Hepatology and Pediatric Nutrition, all obese children older than 3 years old should undergo abdominal ultrasound and liver function tests as a valid tool to identify hepatic fatty infiltration and NAFLD. The serum determination of liver enzymes, particularly ALT, is suggested as well as other non-invasive methods such as ultrasound elastography (FibroScan) to determine in a non-invasive way the risk of liver fibrosis in children and adolescents. **Objectives.** To evaluate the correlation between the degree of obesity, steatosis and hepatic fibrosis due to nonalcoholic liver disease in Mexican obese and overweight pediatric patients. **Material and methods.** We included overweight and obese pediatric patients without any other risk factor for liver disease, and performed transitional elastography. Statistical analysis: Pearson bivariate correlations were made between the BMI, liver fibrosis and liver steatosis. A $p < 0.05$ value was considered significant. **Results.** 27 children were included, 12 (± 2.7) years old, 13 girls (48.1%), BMI was 26.5 ± 3.9. Liver fibrosis was F0 in 74.1% (n = 20), F1 in 18.5% (n = 5) and 3.7% in F2 and F 4 (n = 1) respectively. Liver steatosis was S1 in 14.8% (n = 4), S2 63% (n = 17) and S3 with 22.2% (n = 6). A significant positive moderate correlation was found between the BMI and fibrosis $\rho = 0.557$ ($p = 0.003$), while the correlation between liver steatosis and BMI was low and not significant $\rho = 0.310$ ($p = 0.115$). **Conclusions.** Our study shows that in mexican pediatric population the groups at high risk for developing liver fibrosis duo to nonalcoholic fatty liver are those with overweight, so a prompt diagnosis could allow reducing BMI to prevent the progression of this pediatric population to liver fibrosis and its related complications.

30 CARTEL
BODY COMPOSITION ASSESMENT IN PATIENTS WITH NON-ALCOHOLIC FATTY LIVER DISEASE WITH HIGH CARDIVACULAR RISK

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Background. Non-alcoholic fatty liver disease (NAFLD) is a condition characterized by the accumulation of pathological ectopic fat in conjunction with an inflammatory state, propitiating changes on body composition (BC) and increasing in most of the cases, fat mass (FM) and cardiovascular risk (CVR). Dual-energy X-ray (DXA) and bioimpedance vectorial analysis (BIVA) have been reported as two options to evaluate BC in patients with NALFD. However, BC assessment in NALFD in conjunction with high cardiovascular risk (HCVR) is still unknown. **Objective.** To evaluate BC in patients with NAFLD and HCVR. **Material and methods.** An analytic cross-sectional study was performed at Centro Médico Nacional "20 de Noviembre", in Mexico City, Mexico. Thirty-three patients were recruited from NAFLD clinic which were evaluated clinical, anthropometric (arm, waist and hip circumferences), BC (by DXA and BIVA methods) and echocardiography (CVR assessment by flow-mediated dilatation). Patients were divided as follows: 1) normal BC + low cardiovascular risk (LCVR), 2) altered BC + LCVR, 3) normal BC + HCVR, and 4) altered BC + HCVR. Clinical, anthropometric and BC assessment data were collected. ANOVA or Kruskal-Wallis (continuous variables) and Pearson χ^2 (categorical variables) were used to compare study groups. **Results.** Significant differences were found in median FM located in the trunk (15.5, 17.6, 17.5, 24.3, $p = 0.05$), as well as in the medians of percentage of total FM (kg) (41.1, 41.3, 45.6, 44.5) and waist (cm) (89.5, 101, 99, 106), arm (cm) (32, 34, 31.5, 39) and hip (cm) circumferences (102, 106, 105, 110), the latter variables being clinically important in groups 1, 2, 3 and 4 respectively. **Conclusion.** It was observed that the HCVR is associated in an important way on the behavior of BC and body circumferences, in terms of the FM increase. The authors declare that there is no conflict of interest.

50 CARTEL
EVALUATION OF CXCL-8 AND IL-6 IN PATIENTS WITH ALCOHOLIC LIVER DISEASE

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Background and aims. Cytokines play a critical role in cell communication and activation, the liver is a source of cytokines and chemokines, are key molecules that participate in the development of most liver diseases. There is evidence about the

Table 1 (VI.50). Study group demographic data and CXCL-8 concentration.

	OH (19)	CiOH (62)	CHC (108)	CT (100)	p
Sex n (%)					
Male	16 (84)	58 (93)	22 (29)	138 (89)	< 0.001
Female	3 (16)	4 (7)	86 (71)	27 (11)	
Age (years)	44 ± 11	47 ± 8	51 ± 10	37 ± 9	< 0.001
BMI (kg/m²)	27 ± 7	27 ± 7	27 ± 4	28 ± 4	0.464
AST(IU)	39 ± 10	63 ± 6	84 ± 7	30 ± 1	< 0.001
ALT(IU)	31 ± 5	37 ± 3	90 ± 6	28 ± 2	< 0.001
CXCL-8 (pg/mL)	31 ± 12	35 ± 3	10 ± 3	2.2 ± 0.3	a = 0.027 b < 0.001 c = 0.009
IL-6 (ng/ mL)	1.9 ± 2.7	75.1 ± 54.3	1.8 ± 4	0.5 ± 0.6	a < 0.001 b < 0.001 c < 0.001

Results in mean ± Standard Deviation (a = CT *vs*. OH, b = CT *vs* .CiOH, c = CiOH *vs*. CHC).

participation of neutrophils that are recruited by CXCL-8 in acute liver diseases, and IL-6 has a hepatoprotective effect in alcoholic liver disease (ALD), however, the participation of CXCL-8 and IL-6 in other liver diseases still not clear. **Objective.** To evaluate the concentration of CXCL-8 and IL-6 in alcoholic subjects, alcoholic liver cirrhotic patients, chronic hepatitis C and control subjects. **Material and methods.** We included alcoholic patients that were seen at the Liver Clinic of the Hospital General de México. Alcoholism was defined according to the WHO criteria (70 g/day for men and 50 g/day for women over the last 5 years) and the alcoholic patients were classified as those without cirrhosis of the liver (OH) and those with liver cirrhosis (CiOH). A group of patients with chronic hepatitis C (CHC) and a control group (CT) were also included. The CT subjects consumed 10 g/day of alcohol and had negative viral serology. CXCL-8 was determined in serum through Luminex technology (Biorad). The Mann-Whitney U test was employed in the statistical analysis. **Results.** 81 alcoholic patients were included: 19 without cirrhosis of the liver (OH) and 62 with cirrhosis of the liver (CiOH). They were compared with 108 CHC patients and 100 CT subjects (Table 1). **Conclusion.** CXCL-8 concentration in alcoholics with and without CiOH was 3 times higher compared with the CHC patients and 15 times higher compared with the control subjects. While the concentration of IL-6 in alcoholics was 2 times higher compared to controls and in CiOH patients was 100 times compared with OH and CHC patients. Our results showed that CXCL-8 and IL-6 participate actively maintaining the inflammatory process even in liver cirrhosis.

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51 ORAL
SWEET ENED AND ALCOHOLIC BEVERAGES FREQUENCY INTAKE AND ITS RELATION WITH BIOCHEMICAL MARKERS OF THE DISEASE IN PATIENTS WITH NON-ALCOHOLIC FATTY LIVER DISEASE

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Background. Studies have shown that simple sugar intake influences the development of non-alcoholic fatty liver disease and increases lipogenesis. The consumption of sweetened or alcoholic beverages is associated with the evolution of the pathology, being daily energy intake, overall high simple sugars, the main factor for the development and evolution of hepatic fat. Until now, there are no reports describing the frequency of consumption of this kind of beverages in non- alcoholic fatty liver disease in Mexico. **Aim.** To describe the frequency of sweetened and alcoholic beverage consumption, according to steatosis grade, by patients with non-alcoholic fatty liver disease and its corelation with biochemical markers of the disease. **Material and methods.** A cross sectional descriptive study was performed using a food frequency questionnaire and steatosis grade classification determined by ultrasound. Patients were included when blood glucose levels, hepatic functional test, lipid profile, caloric intake and body mass index were reported. All data were analyzed using SPSS 21.0 to describe the frequency and Spearman correlation was run out to know the relation between the beverages consumption and biochemical markers. **Results.** Of 69 patients, those with grade 1 steatosis, consumed with major frequency flavored water than the rest of the other groups (p = 0.034). Patients with steatosis grade 2 and 3 drank more wine rather than grade 1 and 4 (p = 0.058 and p = 0.057 respectively). Spearman analysis showed a correlation value between high consumption of cola drink and high triglyceride blood levels (r = 0.258 p = 0.05) and between levels of AST (r = 0.390 p = 0.002) and ALT (r = 0.318 p = 0.012), with other flavored sodas. **Conclusion.** Sweetened beverages con-

sumption is higher in steatosis 1 patients while alcoholic beverages consumption is among grade 2 and 3. The consumption of soda is related with high metabolic syndrome biochemical markers in this population.
Authors have no conflict of interests neither sponsorship.

53 CARTEL
ANTHROPOMETRIC AND BIOCHEMICAL MARKER DIFFERENCES ACCORDING TO PROCESSED FOOD INTAKE IN PATIENTS WITH NON ALCOHOLIC FATTY LIVER PATIENTS

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Background. The World Health Organization (WHO) recommends little portions or no amount of processed food in the diet. Few studies have evaluated the association between processed foods with chronic noncommunicable diseases (CND) such as non alcoholic fatty liver disease. **Objective.** To describe the correlation between processed food intake and the degree of steatotis in patients with non alcoholic fatty liver disease. **Material and methods.** Transversal study in adult patients diagnosed with non alcoholic fatty liver disease confirmed by ultrasound. A validated food frequency questionnaire was applied and using the NOVA classification, they were divided into four categories: (np) not processed, (mp) minimum processed, (p) processed and (up) ultraprocessed. Consumption was reported using portions per week. Patients were divided into two groups: steatosis and steatohepatitis. To identify differences t-student test and Pearson correlation were driven utilizing SPSS v20.0. **Results.** Eighty-two patients were studied who complied entire data, 60% were women with median of 55 years, 88.4% had steatosis and 14.6% had steatohepatitis. Processed food intake median among the studied patients was 31 portions per week. Positive correlations were found for the up food intake with serum triglyceride ($r = 0.262$, $p = 0.031$) and body mass index ($r = 0.341$ $p = 0.004$). Also with the up and BMI ($r = 0.246$ $p = 0.042$), to higher energy consumption, the higher the processing level (mp: $r = 0.328$ $p = 0.003$, p: $r = 0.334$ $p = 0.002$, up: $r = 0.427$ $p = 0.000$); and inverse correlations between diet protein intake with the amount of up ($r = -228$, $p = 0.042$) which was maintained with the up foods ($r = -0.232$, $p = 0.039$). **Conclusions.** Consumption of ultra processed foods and processed foods between patients with non alcoholic fatty liver disease is 4 portions per day which associates with hypertriglyceridemia and elevated body mass index, as well as with higher energy consumption and less diet protein intake.
This study has neither sponsorship nor conflict of interests.

70 CARTEL
THE ROLE OF BILIRUBIN CONCENTRATION IN THE DEVELOPMENT OF NON-ALCOHOLIC LIVER AND GALLSTONE DISEASE

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Background and aim. Nonalcoholic fatty liver disease (NAFLD) and gallstones are both highly prevalent conditions in the Western countries, which share some similar risk factors, most of them related to the metabolic syndrome. Nowadays, gallstone disease is one of the most costly digestive disorders, having prevalence around 25% in Mexico. It is well-known that bilirubin is an antioxidant product with possible contribution for NAFLD and gallstones development. Therefore, we aim to investigate whether the concentration of bilirubin is related to the risk to develop gallstone disease with or without NAFLD. **Material and methods.** We reviewed abdominal ultrasound studies from January 2017 to February 2018 looking for healthy patients and patients with NAFLD, Gallstone disease and with both of them. A total of 240 subjects were enrolled in this cross-sectional study. We divided into 4 groups: Control group ($n = 60$), gallstone disease group ($n = 60$), NAFLD group ($n = 60$), and NAFLD with gallstones group ($n = 60$). Afterwards, we reviewed each medical record focus on biochemical and clinical characteristics making a comparison between variables of each group. Furthermore, it has assessed possible risk factors between NAFLD and gallstones through logit model. **Results.** We found a significant association ($p = 0.018$) between unconjugated bilirubin levels and gallstones disease development. According to our findings, it is evident the relationship between serum bilirubin levels and gallstone disease. **Conclusions.** Our results are compatible with the association between high levels of unconjugated bilirubin and gallstone development. Unfortunately, the physiopathological mechanism is unclear. However, we can suggest that increased levels of unconjugated bilirubin are an independent risk factor for biliary lithiasis. It is important to mention that bilirubin seems to have a protective effect in NAFLD development, probably due to its antioxidant role. More studies are necessary to support our findings.

Table 1 (VI.70). Demographic, anthropometric and biochemical characteristics.

	Gallstone and NAFLD n = 60	Gallstone disease n = 60	NAFLD n = 60	Control Group n = 60
Age	51 ± 10.5	46± 11.8	48± 7.94	44 ±10
Platelet x10^3	239 ± 59.05	235± 48.4	236± 49.7	245 ±60.1
Impedance	538 ± 96	571± 92	540± 72	566 ±78
Body fat	23.2 ± 8.6	18.4± 8.4	23 .8± 9.2	18.5 ±6.62
Lean body mass	52.3 ± 9.4	48.6± 10.6	54.2± 9.21	49.1 ±9.14
Albumin	4.2 ± 0.2	4.1± 3.4	4.3±0.2	4.2 ±0.9
Hemoglobin glycosyated	5.5 ± 0.5	5.4± 0.9	6.1±18	5.3 ±0.2
Glucose	99 ± 20	96± 32	106±46	89.9 ±7.3
Triglycerides	154 ± 80	120± 63	180±159	116 ±74
Cholesterol	201 ± 37	200± 38	206±39	197 ±40
HDL	45 ± 13.5	54± 14	46± 12	52 ±15
LDL	126 ± 32	121± 33	125± 31	124 ±33
Total bilirubin	1 ± 0.4	0.9± 0.4	0.9±0.3	0.8 ±0.2
Conjugated bilirubin	0.08 ± 0.4	0.08± 0.07	0.08± 0.06	0.12 ±0.1
Unconjugated bilirubin	0.68 ± 0.6	0.82± 2.5	0.48±0.5	0.34 ±0.4

Table 1 (VI.71). Etiology of cirrhosis in Mexico.

	Cirrhotics n	Age	Gender (M/F) n (%)	Hepatitis C n (%)	Hepatitis B n (%)	Alcohol n (%)	NASH n (%)	Autoinmune n (%)
Medica Sur Clinic & Foundation	413	67.1	(217/196)	169 (40.9)	8 (1.9)	123 (29.7)	71 (17.1)	42 (10.1)
Civil Hospital of Guadalajara "Fray Antonio Alcalde"	156	47.6	(96/60)	91 (58.3)	0	45 (28.8)	20 (12.8)	0
Central Military Hospital	100	62	(65/35)	23 (23)	0	25 (25)	41 (41)	11 (11)
General Hospital of Mexico	100	52.3	(45/55)	35 (35)	0	32 (32)	19 (19)	14 (14)
General Hospital de Durango	73	59.6	(45/28)	8 (10.9)	0	47 (64.3)	18 (24.6)	0
Hospital Juárez de Mexico	174	56.7	(107/67)	22 (12.6)	4 (2.2)	88 (50.5)	53 (30.4)	7 (4.3)
Christus Muguerza "Super Specialty" Hospital	103	64.2	(63/40)	18 (17.4)	2 (1.9)	29 (28.1)	48 (46.6)	6 (5.8)
General Regional Hospital IMSS No. 1	82	59.9	(14/68)	72 (87.8)	0	4 (4.8)	0	6 (7.3)
Total sum	1,201	58.6 ±14	(652/549)	438 (36.4)	14 (1.2)	393 (32.7)	270 (22.5.)	86 (7.1)

71 CARTEL
CURRENT TRENDS OF LIVER CIRRHOSIS IN MEXICO

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Background and aim. In 2004, our research group reported the most common causes of liver cirrhosis were alcohol (39.5%), hepatitis C virus (HCV) (36.6%) and non-alcoholic fatty liver disease (NAFLD) (10.4%). We consider that the epidemiology of cirrhosis has been modified due to the rising prevalence of obesity, metabolic syndrome and autoimmune diseases. Therefore, we aimed to investigate the main etiologies of cirrhosis in Mexicans. **Material and methods.** We performed a cross-sectional multicenter study in which nine hospitals at different areas of Mexico participated (Medica Sur Clinic & Foundation, Hospital Juárez de México, Civil Hospital of Guadalajara "Fray Antonio Alcalde", Christus Muguerza "Super Specialty" Hospital, General Hospital of Mexico "Dr. Eduardo Liceaga", Central Military Hospital, General Hospital of Durango and National Medical Center "20 de Noviembre" General Regional Hospital IMSS). Those hospitals provide health care to different social classes. The inclusion criteria were the presence of either histological, clinical, biochemical, endoscopic, or imaging diagnosis of liver cirrhosis. Data were obtained during a 5-year period (January 2012 - December 2017). **Results.** A total of 1201 patients were enrolled. The mean age of the participants was 58 ± 14 years old; 54.2% were men and 45.8% were women. The main causes of cirrhosis in our sample were: hepatitis C (36.4) followed by alcoholic liver disease (32.7%), NAFLD (22.5%), autoimmune liver disease (7.1%) and hepatitis B (1.2%). Other findings were shown at table 1. **Conclusions.** HCV and alcohol were the most frequent causes of cirrhosis in Mexicans. However, it is important to mention that NAFLD had an increase of 100% compared with our previous rate. Therefore, we can suppose that NAFLD will soon become one of the most frequent etiologies of liver cirrhosis in our country.

75 CARTEL
EFFECTS OF DELPHINIDIN ON LIPID METABOLISM IN TWO EXPERIMENTAL OBESITY-RELATED MODELS OF NON-ALCOHOLIC FATTY LIVER DISEASE

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Background. Non-alcoholic fatty liver disease (NAFLD) is characterized by an excess of hepatic lipids. Anthocyanin-rich food consumption is linked to health benefits in NAFLD, although the precise functional role of delphinidin (Dp) has yet to be established. **Objectives.** To assess the effects of Dp in NAFLD metabolic alterations, as well as molecular mechanisms in two experimental obesity-related models of NALFD. **Material and methods.** HepG2 were incubated with palmitate (PA) to induce lipotoxic damage, and concomitantly treated with Dp for 24 h. Total lipids were measured with Oil Red O, and triglycerides were determined by an enzymatic assay. To assess molecular mechanisms, cells were pre-treated with PA for 24 h, and then exposed with Dp for 1 h. C57BL/6Nhsd mice were allocated in groups according to diet: standard diet (Control) or high-fat and high-carbohydrate diet (HFD) for 16 wk to induce NAFLD. HFD was divided into subgroups: one treated with Dp (HFD-Dp) daily for 4 wk, while HFD group treated with vehicle. Weight, fasting glucose, dietary ingestion, insulin tolerance test, and liver histology were evaluated. Gene expression was evaluated by RT-PCR and protein levels by Western Blot in both experimental models. Parametric data: one-way ANOVA and Tukey's *post-hoc* test. Non-parametric data: Kruskal-Wallis and Mann-Whitney U. $P < 0.05$. **Results.** Dp prevented lipid accumulation by PA in HepG2, and down-regulated gene expression of SREBP1c, FAS, and CPT1a without modifying AMPK levels. In vivo, Dp did not ameliorate lipid metabolic alterations raised by HFD. Histological analysis showed hepatic damage in HFD groups and no differences between HFD and HFD-Dp groups were found. Hepatic gene expression of ACC and FAS were not altered by HFD. SREBP1c was similar in HFD and HFD-Dp groups. No significant changes were observed in adipose tissue gene expression by HFD or Dp. Immunobloting analysis revealed no changes in pathway SIRT1-LKB-AMPK-PPARa by both HFD groups. **Conclusions.** Dp may provoke beneficial effects in the prevention of hepatic lipid accumulation. Nevertheless, the dose administrated in mice that simulated the total intake of anthocyanins consumed by humans, has no effect as a treatment on hepatic lipid metabolic alterations and histological abnormalities associated with exposure to chronic HFD.
Conflict of interest: We have no conflict of interest to declare.

76 CARTEL
EVALUATION OF OXIDATIVE STRESS IN OBESE PEDIATRIC PATIENTS WITH NON-ALCOHOLIC FATTY LIVER DISEASE (NAFLD)

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Background. Pediatric non-alcoholic fatty liver disease (NAFLD) has become the most frequent chronic liver disease in children and adolescents, due to the growing prevalence of childhood obesity and overweight. Evidence from experimental models suggests that oxidative stress plays a key role in mechanisms leading to the death of fat-laden hepatocytes. Lipids and proteins oxidative stress is evaluated through malondialdehyde (MDA) and carbonilated proteins (CP) which could serve as markers of oxidative stress in NAFLD. **Objective.** Evaluate the concentration of MDA and CP in obese pediatric patients diagnosed with NAFLD. **Material and methods.** A cross-sectional study was carried out. Pediatric patients with a body mass index above the 95 percentile according to the WHO criteria, without previous liver or metabolic disease were included. NAFLD diagnosis was made by hepatic ultrasonography. MDA serum concentration was determined by the formation of a complex with thiobarbituric acid. CPs were measured in serum by reaction with 2,4-dinitrophenylhydrazine. For the statistical analysis, U-Mann-Whitney and Spearman correlation were performed, we considered $p < 0.05$ as significant. **Results.** 132 pediatric patients with obesity were included. Average age was 10.38 ± 2.94 years. NAFLD diagnosis was made in 71 patients (53.8%). MDA levels were with HGNA (0.023 ± 0.021) and without HGNA (0.38 ± 0.1) with $p = 0.65$. For CP concentration, was found that for those with NAFLD was 1.68 ± 2.12 and without NAFLD was 0.94 ± 1.49 with $p = 0.014$, according to the correlations between CP and biochemical determinations, a positive correlation was found with Total Bilirubin, Uric Acid, Glucose and Hematocrit, and a negative with Leukocytes and Erithrocyte Sedimentation Rate. **Conclusion.** More than 50% of the study population presented NAFLD. In patients with NAFLD there is a higher concentration of CP compared with patients without NAFLD, which indicates a possible oxidative damage at protein level due to protein imbalance caused by liver steatosis.
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84 CARTEL
QUALITY OF THE DIET BY LEVEL OF PROCESSING FOOD IN PATIENTS WITH FATTY LIVER DISEASE OF NON-ALCOHOLIC ORIGIN

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Background. There is none report in Mexico that describe the quality of the diet in patients with fatty liver disease of non-al-

coholic origin; although it is known that the excess of simple sugars such as fructose and saturated fats in the diet and also present in processed foods, are risk factors for the disease. **Objective.** To determinate the quality of the diet using levels of food processing and its association with the degree of steatosis in patients with non-alcoholic fatty liver disease (NAFLD). **Material and methods.** Cohort of patients with NAFLD followed between 2012 and 2018 who had biochemical data, 24 h reminder (R24) and frequency of food consumption (FCA) to determine the quality of the diet by macronutrient distribution. The NOVA classification of food processing was used, and to know the differences between groups a Kruskal Wallis test was performed, also Spearman correlation tests was used with the statistical package SPSS v.21. **Results.** Of 89 patients; 59.6% women, 40.4% men, median age 55 years, 19.1% with mild steatosis, 21.3% with moderate steatosis and 59.6% severe, it was found that patients with severe steatosis consumed more protein than patients with mild steatosis (0.026); and the protein consumption correlates inversely with the amount of energy in the diet ($r = 0.284$ $p = 0.007$); and that the energy of the diet correlates directly with higher consumption of ultra processed foods ($r = 0.354$ $p = 0.001$). **Conclusions.** In this study it was found that in patients with mild steatosis had an unbalanced distribution of macronutrients compared to patients with severe steatosis, this could be because patients with severe steatosis are aware to avoid cirrhosis or hepatic failure. More studies are required to evaluate this association.

The authors declare, there is no conflict of interests or sponsorship for this work.

91 CARTEL
THE ETIOLOGY OF LIVER DISEASE AS A RISK FACTOR IN THE DEVELOPMENT OF FIBROSIS: A STUDY WITH TRANSITIONAL ELASTOGRAPHY

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Introduction. Chronic liver disease is increasingly prevalent worldwide, the etiology includes chronic alcohol consumption, nonalcoholic fatty liver, chronic hepatitis B and C virus infections, autoimmune diseases, among others. The development and progression of hepatic fibrosis, although multifactorial and not linear, is not similar in the different causes of liver disease. Although the treatment must be individualized, there are constants in each etiology of liver disease. **Objective.** Determine for each etiology the risk of developing advanced fibrosis, measured with transitional elastography. **Material and methods.** Transitional elastography was performed in patients with a risk factor for the development of hepatic fibrosis in the following groups: alcohol liver disease, autoimmune disease, non-alcoholic fatty liver, hepatitis C virus, cholestatic diseases. Statistic analysis. Comparisons were made between the different etiologies to evaluate differences in each of them, between the degrees of fibrosis and steatosis independently. Binary logistic regressions were carried out to determine which etiology has the highest risk of developing grade F4 fibrosis and grade S3 steatosis. A level of alpha significance < 0.05 was considered. **Results.** We included 446 patients (61% women) with 52 ± 10.9 years of age. 47.8% (n = 213) was NASH, 22.9% (n = 102) HCV, 18.4% (n = 82) by alcohol, 5.4% (n = 24) cholestatic and 5.6% (n = 25) autoimmune. The highest risk for grade F4 fibrosis was higher for NASH with an OR = 2181 ($p = 0.001$); protector for HCV OR = 0.593 ($p = 0.021$). For alcoholic, cholestatic and autoimmune fibrosis, no significant predictors were found for F4. The predictors for S3 were for NASH OR = 2.942 ($p = 0.001$); for alcoholic OR = 2,917 ($p = 0.003$); for HCV, cholestatic and autoimmune no significant predictors were found for S3. **Conclusions.** The risk of developing advanced fibrosis is twice as high in NASH as in any other etiology. HCV infection presents a slower risk of the development of fibrosis. Regarding steatosis the risk of developing a severe stage is for NASH, but chronic alcohol consumption the possibility of severe steatosis is almost triple that in any other etiology.

95 CARTEL
RELATIONSHIP OF BIOACTIVE LIPID CONSUMPTION WITH NAFLD AND LIVER FIBORIS

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Background and aim. Dietary factors are associated to development and progression of non-alcoholic liver disease (NAFLD). Consumption of bioactive lipids (BL) has been observed as a risk or protective factor in health. The aim of this study was to describe the relationship of BL consumption with NAFLD and fibrosis. **Material and methods.** It was a cross-sectional study with 164 patients with NAFLD and 96 control patients. Clinical and biochemical characteristics were evaluated. Consumption of BL was assessed by a food frequency questionnaire. NAFLD and liver fibrosis were diagnosed by transient elastography with control attenuation parameter. *r* of Spearman was calculated to determine the relationship of BL consumption and presence of NAFLD and fibrosis. **Results.** 68% of sample were men. Mean of age and body mass index were 45 ± 9.9 years and 26 ± 3.9 kg/m^2 respectively. In this population total lipid consumption was 8% higher than daily recommendation. In control group decibels (dB) showed negative relation with consumption of eicosapentanoic acid (EPA) ($r = -0.20$; $p = 0.04$) and docosahexanoic acid (DHA) ($r = -0.26$; $p = 0.01$). Patients with severe NAFLD showed positive relation with palmitic acid ($r = 0.41$; $p < 0.0001$), estearic acid ($r = 0.44$; $p < 0.0001$), palmitoleic acid ($r = 0.41$; < 0.0001), oleic acid ($r = 0.34$; $p = 0.003$), arachidonic acid ($r = 0.38$; $p = 0.001$), EPA ($r = 0.257$; $p = 0.02$) and DHA ($r = 0.259$); $p = 0.02$), as well as consumption of saturated BL ($r = 0.43$; $p = < 0.0001$), and monounsaturated BL ($r = 0.35$; $p = 0.002$). Relationships between fibrosis (skPa) and BL were positive with butyric acid ($r = 0.36$, $p = 0.002$), caprilic acid ($r = 0.30$; $p = 0.009$), capric acid ($r = 0.34$; $p = 0.003$), palmitic acid ($r = 0.33$; $p = 0.003$), estearic acid ($r = 0.32$; $p = 0.005$), pamitoleic acid ($r = 0.29$; $p = 0.01$), oleic acid ($r = 0.29$; $p = 0.01$) and polyunsaturated BL ($r = 0.28$; 0.01). **Conclusion.** High consumption of BL was related with severity and presence of liver fibrosis in patients with NAFLD.

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96 CARTEL
ANALYSIS OF THE DAMAGE TO PROTEINS, LIPID AND THE MAIN ENDOGENOUS ANTIOXIDANT IN PATIENTS WITH ALCOHOLISM AND ALCOHOLIC LIVER CIRRHOSIS

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Background. Excessive alcohol consumption is the main cause of alcoholic liver disease, in Mexico it represents the 5th cause of death. The metabolism of ethanol produces reactive oxygen species (ROS) that alter lipids (malondialdehyde), proteins (protein carbonylation) and glutathione. **Objective.** To evaluate the concentrations of malondialdehyde (MDA), protein carbonyls (CP) and reduced glutathione (GSH), oxidized (GSSG) and the GSH/GSSG ratio in patients with risky consumption, alcoholism, liver cirrhosis and control subjects. **Material and methods.** Prospective-transversal study. AUDIT, DSM IV questionaries and clinical history were applied to classify the subjects as controls, risk consumption, alcoholism or cirrhosis. The serum concentration of MDA and CP were determined by reactions with thiobarbituric acid and 2,4-dinitrophenylhydrazine. The levels of GSH and GSSG were determined in peripheral blood (Calbiochem, USA) and the GSH/GSSG ratio was calculated. The statistical analysis was performed an ANOVA and orthogonal analyzes. **Results.** 201 subjects were included: 21 risk consumption (Ri), 11 alcoholics (OH), 69 liver cirrhosis (CiOH) and 100 controls (CT). The concentrations of MDA in nmol MDA/mg protein were Ri: 0.1 ± 0.1, OH:0.3 ± 0.1, CiOH:0.2 ± 0.02, and CT: 0.1 ± 0.02 finding significant differences between CiOH and CT $p = 0.028$ and CiOH and Ri $p < 0.001$. The concentration of CP in carbonylated nmolproteins/mg protein was Ri: 0.1 ± 0.02, OH: 0.1 ± 0.06 and CiOH: 0.1 ± 0.01 and CT: 0.2 ± 0.05, finding no significant differences. The GSH value in µM was higher in OH: 756 ± 52 and CiOH: 657 ± 19 than in Ri 592 ± 39 and CT 585 ± 13, finding significant differences between the OH group and CT $p = 0.009$, CiOH and CT $p = 0.003$ and OH and Ri $p = 0.020$. The GSSG in µM were Ri: 306 ± 69, OH: 756 ± 52, CiOH 657 ± 19 and CT 229 ± 20. The ratio GSH/GSSG was Ri: 2 ± 0.7, OH:-1.6 ± 4.4, CiOH: 2.5 ± 1.6 and CT: 0.22 ± 2.6. No differences were found for GSSG or for the GSH / GSSG ratio. **Conclusions.** MDA can be useful as a biomarker of oxidative stress in cirrhotic patients. The increase of GSH in subjects with alcoholism and patients with cirrhosis suggests the compensatory mechanisms to the stress generated by the alcohol consumption.

The authors declare that there is no conflict of interest.

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101 CARTEL
CORRELATION GRADES OF LIVER STEATOSIS / FIBROSIS WITH TRANSIET ELASTOGRAPHY BETWEN LIVER BIOPSY IN OBESE PATIENTS

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Background and aim. Obesity increases the incidence of non alcoholic fatty liver disease (NAFDL) the most common conditions in chronic liver disease (CLD). Transiet elastography (TE) evaluate both steatosis and fibrosis simultaneously. Hepatic steatosis is determined by the controlled attenuation parameter (CAP) expressed in decibel per meter (dB/m), the grade steatosis varies in patients with CLD of different etiologies and liver stiffness expressed in kilopascal (kPas). **Aim.** To determine if there is an accurate correlation of hepatic steatosis / fibrosis by TE between liver histology and body Mass Index (BMI), and scores in obese patients. **Material and methods.** Observational, retrospective, descriptive study. We evaluated patients referred for TE to the Departament of Gastroenterology and simultaneously liver biopsy to the departamento Obesity Clinic to the Hospital General de México, the date collected are anthropometric, demographic, clinic and biochemical, evaluation of the CAP using the Fibroscan (Echosens Paris Francia) XL probe. In biopsies: fibrosis and steatosis were staged accordin to the NAFDL score and METAVIR. The NAFDL fibrosis score (NFS) categorized in the following < -1.455 = F0-F2, -1.455 – 0.675 indeterminate, > 0.675 = F3-F4. Hepatic steatosis index (HSI) < 30 eliminate NAFDL and > 36 positive. SPSS v.24 was used for statitical analysis found correlation between CAP and steatosis in histology, IMC, clinic parametric. **Results.** On the 29 patients (45 ± 8 years, 26F:3M), 90% women. BMI: 43 (± 6.5). Positive correlation between CAP and percent of steatosis of 0.397 ($p = 0.33$), BMI 0.395 ($p = 0.34$), Score HSI; 0.462 ($p = 0.12$), fibrosis: 0.285 ($p = 0.134$). The correlation between kPas *vs.* BMI 0.362 ($p = 0.05$), histology fibrosis 0.128 ($p = 0.509$), score NAFDL ($p = 0.599$). **Conclusion.** There is the possibility of overestimating hepatic stiffness results in patients with obesity with TE, with liver biopsy and scores being more accurate and reliable.

No conflicts of interest.

114 CARTEL
LIPID PANEL ALTERATIONS IN PATIENTS WITH ADVANCED LIVER FIBROSIS FOR NON-ALCOHOLIC FATTY LIVER DISEASE

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Background. Alterations in lipid panel are commonly seen in chronic liver disease and contribute to the morbidity and death of the patients. It has been described that hepatic synthesis of lipids decreases as fibrosis increases and the disease advances. However, the evidence supporting these findings is low. **Aim.** To describe lipid panel alterations in patients with advanced liver fibrosis due to non-alcoholic steatohepatitis compared to those

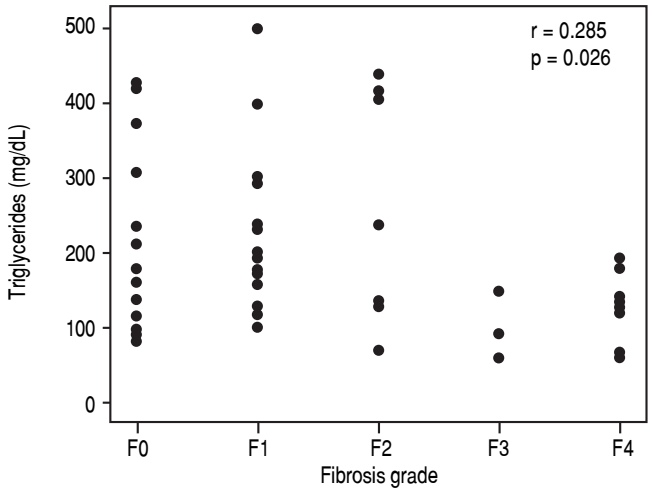

Figure 1 (VI.114). *Correlation between liver fibrosis grade and triglycerides plasma levels.*

with mild fibrosis. **Material and methods.** Cross-sectional study. Records of patients in whom transient elastography (Fibroscan®) was performed between 2013 and February 2018 to obtain levels of triglycerides, plasma cholesterol, HDL and LDL, weight and body mass index (BMI). Fibrosis grade (METAVIR) was determined using the kilopascals (Kpa) of Fibroscan®. For the statistical analysis, central tendency and dispersion measurements were calculated, and nonparametric tests such as the Spearman correlation, Mann-Whitney U and χ^2 test were performed. A value < 0.05 was considered significant with 95% confidence interval. The analysis was undertaken using SPSS v.22 software. **Results.** Sixty-one patients were included. 62.3% (38 patients) were men. The mean age was 49.74 ± 12.03 years. Significant differences were observed between study groups in levels of triglycerides (213.41 ± 111.11 *vs.* 120.54 ± 42.26, $p \leq 0.001$) and plasma cholesterol (208.96 ± 47.75 *vs.* 165.15 ± 37.64, $p = 0.002$), which were lower in patients with advanced fibrosis (F3-F4). A statistically significant negative correlation was observed on linear regression analysis ($r = -0.285$, $p = 0.026$) between fibrosis grade and plasma triglycerides (Figure 1). **Conclusion.** In this study, an association was observed between lipid panel with the grade of fibrosis. The triglycerides and plasma cholesterol were lower in patients with advanced fibrosis compared to those with mild fibrosis. These findings demonstrate the impact of hepatic dysfunction on the synthesis and secretion of lipids, suggesting their potential utility as an indirect marker of liver disease progression in patients with nonalcoholic fatty liver disease.

132 CARTEL
PHASE ANGLE AND NUTRITIONAL STATUS IN PATIENTS WITH ACUTE ALCOHOLIC HEPATITIS

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Introduction. Phase angle (j) measures the cuantity and quality of body cells, which allows to reach conclusions about the state of nutrition and health of a person which is obtained by means of bioimpedance. This has been used for the diagnosis of malnutrition since it is associated with the size of the cell and integrity of the cell membrane. **Objectives.** Relate nutritional status and phase angle in patients with acute alcoholic hepatitis. **Material and methods.** Observational study, case series type, carried out from August to December 2017, where patients diagnosed with alcoholic hepatitis admitted to the Gastroenterology Service were evaluated, who underwent bioimpedance during their hospitalization. The data collected is summarized with descriptive statistics. The bioimpedance measurement was carried out with the Seca analytics mBCA 115 impedance analyzer. **Results.** Twelve patients with diagnosis of alcoholic hepatitis (91.6% men) were evaluated, the mean age was 42.7 years, of which 7 died. 42% had severe depletion of fat mass, 33% moderate depletion, 8% mild depletion, and 17% a percentage greater than 100% of fat mass according to age and sex. According to the lean mass 33% had severe depletion, 42% moderate depletion, 8% mild depletion and 17% in normal ranges according to age and sex. According to the phase angle, values lower than 4.8 were presented, with a prevalence ranging from 3.0 to 3.8, with the lowest value obtained being 2.6, relating the phase angle obtained with the patient's survival and clinical progression. **Conclusions.** Patients with acute alcoholic hepatitis present protein caloric malnutrition as well as muscle mass depletion and predominantly moderate to severe fat mass, in addition to a phase angle below the mean for age and sex.
Conflict of interests. This work has not been subsidized.

133 CARTEL
CORRELATION OF THE DEGREE OF OBESITY AND DEGREE OF FIBROSIS IN PATIENTS WITH HEPATIC NON ALCOHOLIC HEPATIC DISEASE

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Background. Non-alcoholic fatty liver disease (NAFLD) is characterized by an excessive accumulation of liver fat, which is associated with an insulin resistance with histopathological features: Steatosis in > 5% of hepatocytes as indicated by histological analysis or by 5.6% according to proton magnetic resonance spectroscopy (1H-MRS). There are several non-invasive methods to quantify the degree of steatosis and liver fibrosis, without substituting the need for liver biopsy for the diagnosis of

NAFLD. However, hepatic biomarker detection methods and non-invasive diagnostic methods can correlate the degree of fibrosis in at-risk populations such as patients with metabolic syndrome. **Objective.** To evaluate the correlation between the degree of obesity according to WHO scale, the alteration of markers of liver inflammation and the degree of fibrosis by transitional elastography. **Material and methods.** Observational, descriptive, cross-sectional study, cohort type, adult patients referred to study were evaluated for the diagnostic approach of fatty liver disease with diagnosis of obesity according to the classification of the world health, carried out in the Clinic of Liver of Hospital General de México; minor patients were excluded, with liver disease due to alcohol, chronic viral disease, autoimmune disease diagnosed. The results were registered with the statistical package SPSS version 23. It was calculated from Pearson taking as significant $p = 0.001$. **Results.** Thirty patients were included, 67% women and 30% men, with an average age of 53.07 ± 10 years. Conform of the following degrees of fibrosis: F0 (7), F1 (2), F2 (2), F3 (6), F4 (13). The degree of obesity: Grade I - 26.7% (8), Grade II - 36.7% (11), Grade III - 26.7% (8), Grade IV - 10% (3). A correlation was found between the degree of fibrosis and obesity with a $p < 0.35$. **Conclusions.** In our study group we only found the positive correlation between the degree of obesity and the degree of fibrosis, if it is for a small sample, but it is a finding that confirms higher obesity risk of liver disease development.

Without sponsorship.

138 CARTEL
PROLONGED-RELEASE PIRFENIDONE REDUCES BODY WEIGHT AND EPIDIDYMAL FAT ACCUMULATION IN A NAFLD/NASH MOUSE MODEL

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Background. Non-alcoholic fatty liver disease (NAFLD)/ Non-alcoholic steatohepatitis (NASH) is featured by hepatic lipid accumulation, inflammation, hepatocyte ballooning and fibrosis. Transcriptional factor PPARá and rate-limiting enzyme CPT1A up-regulation are clearly related to lipid β-oxidation enhancement in the mitochondrion. 5-methyl-1-phenyl-2-(1H)-pyridone (PirFeniDone, PFD) is an antifibrotic agent with anti-inflammatory and antioxidant effects. No studies have evaluated prolonged-release PFD (PR-PFD) properties on lipid metabolism in a high fat-carbohidrate diet mouse model. **Aim.** To investigate PR-PFD actions on body weight, liver weight, epididymal fat accumulation and metabolic key molecules for lipid metabolism in a mouse model of NAFLD/NASH induced by high-fat/carbohydrate diet (HF), which resembles the so-called "Western diet" in human consumption. **Material and methods.** Mice were fed with control (Normo Diet) or hypercaloric HF diets (60% fat, 42 g/L sugars) for 16 weeks. At the eigth week HF animals were allocated in four groups: HF, HF + PR-PFD, SD (switch-diet) and SD + PR-PFD. PR-PFD (~300 mg/kg/d) was administered in food from the eigth week up to the end of protocol. Normo diet animals received ND (Normo diet) for 16 weeks. Serum glucose, animal weigth, epididymal fat, liver, liver/animal weigth, weigth gain, were measured during the protocol and at sacrificie. 4 h-fasting serum glucose, liver biochemical serum markers, caloric ingest, hepatic proteins and Oil-Red stainning were assessed in liver tissue. **Results.** Compared to HF group, HF +PR-PFD-treated mice showed less animal total weigth and dramatically decreased epididymal fat weight, no diferences were observed in liver weigth, liver/animal weigth, at the time of sacifice. Fat liver accumulation was reduced in Oil-Red stained tissues determined by histopathological analyses. In switch-diet groups, parameters like total animal weigth, epididymal fat, liver, liver/animal weigth, weigth gain and liver biochemical serum markers showed significative reduction as compared with HF animals. PR-PFD induced a significant increase in the protein expression of PPARα and CPT1A as measured by Western blot analysis. ALT and AST increased levels caused by HF were significantly reduced by PR-PFD regimen.

139 CARTEL
PROLONGED-RELEASE PIRFENIDONE DECREASES INSULIN RESISTANCE IN A NAFLD/NASH MOUSE MODEL INDUCED BY HIGH FAT/CARBOHIDRATE RICH DIET

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Background. NAFLD (Non-alcoholic fatty liver disease) / Non-alcoholic steatohepatitis (NASH) is characterised by hepatic lipid accumulation, inflammation, hepatocyte ballooning and fibrosis. Metabolic syndrome, insulin resistance, obesity and diabetes mellitus are concomitantly present in an elevated percentage of patients. 5-methyl-1-phenyl-2-(1H)-pyridone (PirFeniDone, PFD) is an antifibrotic agent with anti-inflammatory and antioxidant effects. No studies have evaluated a new pharmaceutical formulation of prolonged-release PFD (PR-PFD) properties on insulin resistance in a high fat/carbohidrate diet mouse model. **Aim.** To investigate PR-PFD actions on insulin resistance and key molecules involved in glucose metabolism in a mouse model of NAFLD / NASH induced by high-fat/carbohydrate diet (HF), which resembles the so-called "Western diet" in human consumption. **Material and methods.** Mice were fed with control (Normo Diet) or hypercaloric HF diets (60% fat, 42 g/L sugars) for 16 weeks. At the eigth week HF animals were allocated in four groups: HF, HF + PR-PFD, SD (switch-diet) and SD + PR-PFD. PR-PFD (~300 mg/kg/d) was administered in food from the eigth week up to the end of protocol. Normo diet animals received ND (Normo diet) for 16 weeks. 4 h-fasting serum glucose, animal weigth and caloric ingest were measured weekly. ITT (insulin tolerance test) was measured at the 8th week and at sacrifice (16 weeks). **Results.** Compared to HF group, HF+PR-PFD-treated mice showed a statistically significant increased sensitivity to insulin at the end

of the 16th week. This behavior was comparable to what was found in the mice included in the switch diet groups and normo diet mice, which also displayed, as expected, an increased sensitivity to insulin. Animal weigth along the study was reduced in switch diet groups, but not in HF diet groups. Liver lipids accumulation was reduced in fresh-frozen Oil-Red stained tissues indicating less amount of fat. Finally, ALT and AST upregulated levels by the effect of hypercaloric diet consumption were significantly reduced by the the treatment with Prolonged Release-PirFeniDone. **Conclusion.** PR-PFD stimulates insulin sensitivity in mice with NAFLD/NASH.

VII. OTHER TOPICS

22 CARTEL
VITAMIN D (1,25 OHD3) AND ITS RELATION WITH CHRONIC HEPATIC DISEASES IN PATIENTS OF THE CENTER OF HEPATOLOGY OF THE UNIVERSITY HOSPITAL "DR. JOSÉ E. GONZÁLEZ"

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Introduction. Vitamin D (1,25 OHD3) is a secosteroid hormone, regulator of calcium and bone metabolism, with pleiotropic effects of cell proliferation, differentiation and immunomodulation. The insufficiency and deficiency of this is considered common in the population in general, but is more frequent among the elderly people and individuals with chronic diseases. Its role in chronic liver diseases is not well established, but there are several reports suggesting that this molecule has anti-inflammatory and anti-fibrotic effects; therefore, it has a significant role in the natural history of the development of chronic liver disease (CLD). **Objective.** To evaluate the frequency of categories of 1,25 OHD3 (sufficient: 30 a 100 ng/mL, insufficient: 10 a 30 ng/mL and deficient: <10 ng/mL) in different hepatopathies: biliary cholangitis (BC), alcohol liver disease (ALD), non-alcoholic steatohepatitis (NASH), autoimmune hepatitis (AIH), hepatitis E Virus (HEV), hepatocellular carcinoma (HCC), Gilbert's syndrome (GS), hepatitis B virus (HBV) and hepatitis C virus (HCV), in patients of the Hepatology Center of the University Hospital "Dr. José E. González". **Material and methods.** Retrospective study selecting patients from January 2015 to December 2017 with diagnosis of CLD and values of 1,25 OHD3 (descriptive statistics). **Results.** 113 patients were received, 69 women (61.06%) and 44 men (38.94%) with an average age of 59 years old (38-85 years old). With diagnosis of NASH (49.56%), HCV (23.89%), AIH (6.96%), ALD (7.08%), BC (7.08%), HBV (1.77%) and GS, HCC and HEV (0.88%). Insufficiency of vitamin 1,25 OHD3 for HCV was found in 85%, ALD 75%, NASH 73%, AIH 56% and BC 50%, and for HEV, HCC and GS all patients provided insufficient values in the levels of 1,25 OHD3 (100%). For HBV 100% had sufficient values of this. **Conclusions.** The insufficient serum levels of vitamin 1,25 OHD3 were feature in our cohort of patients with HCV, NASH and ALD (85%, 73% and 75% respectively). But for patients with BC and AIH (50% and 56% respectively) it was not so. The results for HEV, HCC, GS and HBV were not evaluated due to the low number of patients (n < 2).

Conflict of interest: This work has been totally subsidized for own resources.

23 CARTEL
ALPHA FETOPROTEIN SERUM LEVELS IN PATIENTS WITH CHRONIC LIVER DISEASE: REPORT OF LIVER UNIT OF UNIVERSITY HOSPITAL "DR. JOSÉ E. GONZÁLEZ"

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Background. Alpha-fetoprotein (AFP) is a glycoprotein produced in minimal amounts in the adult human. The low production is carried out by the oval liver cells that surround the bile ducts. At present AFP is a serum biomarker of the most reliable and common used as part of the diagnostic tests of hepatocellular carcinoma (HCC), especially in patients with chronic liver diseases. **Objetive.** To evaluate the levels of AFP in patients with chronic liver disease. **Material and methods.** A descriptive and retrospective study was carried out in the Liver Unit of the University Hospital "Dr. José E. González" in patients with chronic liver disease and AFP determination from January 2015 to December 2017. **Results.** The study included 160 patients with an average age of 50.7 ± 13.5 years, of which 76 were of the male gender with an average age of 55.2 ± 14.3 years and 84 of the female gender with an average age of 58.0 ± 12.7 years. Significant difference was observed between the group of patients with HCC (1819.00 ± 3070.00 ng/mL) *vs.* the study groups: primary biliary cholangitis (3.52 ± 2.23 ng/mL), hepatopathy of origin to be determined (3.76 ± 2.27 ng/mL), non-alcoholic steatohepatitis (3.90 ± 3.56 ng/mL), hepatitis C virus (4.67 ± 2.43 ng/mL), hepatitis B virus (3.11 ± 2.21 ng/mL), alcohol liver disease (6.86 ± 7.31 ng/mL) and autoinmmune hepatitis (2.11 ± 0.86 ng/mL) (p < 0.001, respectively). **Conclusions.** In the present study, only levels higher than the normal range were observed in 100% of the patients in the HCC group, which agrees with the reports that refer to it as a serum follow-up marker and useful with other studies for the diagnosis of HCC. The other groups of patients showed levels within the reference range. Therefore, in this study it can be observed that serum AFP remains a laboratory test of great importance in the diagnosis of HCC allowing differentiation between other chronic liver diseases.

The authors declare that there is no conflict of interest.

31 CARTEL
CLINICAL, SEROLOGICAL AND TECHNICAL FACTORS ASSOCIATED WITH COMPLICATIONS WHEN PERFORMING HEPATIC BIOPSIES

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Introduction and objectives. The evaluation of liver diseases by biopsy remains the gold standard. Being an invasive procedure is not free of complications; of these, hemorrhage is the most common cause and severe bleeding complicates 0.06 - 0.35% of cases, other less common causes such as intrahepatic or subcapsular hematomas are clinically not significant and reported in up to 25% of patients in whom ultrasound was performed 24 hours after the biopsy, the mortality associated with it occurs in 0.01 - 0.1% of cases. **Objectives.** Identify clinical risk factors, serological and related to the procedure that may be associated with the development of complications linked to liver biopsy. **Material and methods.** A descriptive, observational and retrospective study. We reviewed the files of patients in whom liver biopsy was performed between January 2000 to December 2010 at the National Institute of Medical Sciences and Nutrition "Salvador Zubirán". **Results.** We reviewed the records of 379 patients in whom a liver biopsy was performed, the complications occurred in 15 patients, corresponding to 4.2% of the total patients, the median age was 47.9 years with greater frequency in women, 10 (66.7%) associated percutaneous biopsy and 5 (33.3%) associated with transyugular biopsy. The main complications were hemorrhage defined as hemoglobin decrease > 2 g/dL in 7 patients (46.6%), 4 patients with pleural pain (26.6%) and 4 transient bacteremia patients (26.8%), we did not find statistical significance between the complication and indication of the biopsy. Greater complications were found in patients diagnosed with cirrhosis secondary to viral hepatitis; biochemical alterations such as liver function tests with cholestatic pattern and hypoalbuminemia had statistical significance with complications; platelets and PTT were not associated as factors. **Conclusions.** Complications related to this procedure are dependent on the type of approach, the method performed and previous labeling. More frequently linked to more advanced liver disease, however, values such as platelets, TTP and INR were not significantly associated. We believe that in this group of patients the approach of choice should be the one that provides the highest safety profile.

Conflict of interest: This work has been totally subsidized with resources provided by the National Institute of Medical Sciences and Nutrition "Salvador Zubirán".

48 CARTEL
INSULIN-LIKE GROWTH FACTOR BINDING PROTEINS AS POTENTIAL NONINVASIVE BIOMARKERS OF HEPATIC FIBROSIS

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Background and aims. Fibrosis and cirrhosis are characterized by an excess of extracellular matrix (ECM) that is attributable to the hepatic stellate cells (HSCs). IGF-1 is produced by the HSCs and is modulated by the insulin-like growth factor binding proteins (IGFBPs). The liver is the main source of IGF and IGFBPs in the circulation. **Objective.** To evaluate the concentration of IGFBPs (1-7) in patients with Chronic Hepatitis C (CHC) and in non-infected subjects (CT) and also according with grade of fibrosis. **Material and methods.** Blood samples were obtained from patients with CHC and from participants included as the control group (CT). Informed consent was ob-

Table 1 (VII.48). Study group demographic data and IGFBP quantification results.

IGFBP (ng/mL)	CT (100)	CHC (108) F0 (35)	F1-F2 (11-14)	F3 (21)	F4 (39)	p
1	0.6 ± 0.1	1 ± 0.5	1.5 ± 0.5	1 ± 0.5	1.4 ± 0.5	NS
2	3.9 ± 3.5	8.8 ± 8.4	10 ± 5	26 ± 9	18 ± 7	a = 0.007
3	878 ± 406	695 ± 202	620 ± 350	844 ± 304	756 ± 391	NS
4	21 ± 19	25 ± 17	88 ± 76	37 ± 30	77 ± 29	a = 0.028
5	241 ± 118	97 ± 71	237 ± 186	107 ± 36	324 ± 292	a = 0.018, c < 0.001, d < 0.001
6	122 ± 42	136 ± 53	112 ± 68	168 ± 81	126 ± 59	NS
7	33 ± 31	20 ± 10	42 ± 30	91 ± 23	60 ± 42	a < 0.001, b < 0.001, c = 0.008, d = 0.002, e = 0.005

Results in mean ± SD. a = CHC *vs.* CT. b = F0 *vs.* F3. c = F0 *vs.* F4. d = F1-F2 *vs.* F3. e = F3-F4.

tained from all the participants IGFBP levels (1-7) were quantified in serum by the multiplex array system (Luminex, Biorad). The Mann-Whitney U test was used in the statistical analysis. **Results.** 108 patients with CHC were included and compared with 100 CT subjects. The mean age of the CHC patients and the controls was 51 ± 10 and 37 ± 9, respectively. **Conclusion.** Our study shows that IGFBP-3 is the most abundant circulating protein. IGFBP-2, IGFBP-4, IGFBP-5 and IGFBP-7 were significantly increased in patients with CHC, indicating that these proteins are induced in liver disease and possibly modulating ECM proteins expression. We consider that IGFBPs can be serum biomarkers of liver fibrosis.

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49 CARTEL
MALNUTRITION DIAGNOSED BY MID-ARM CIRCUMFERENCE (MAMC) PREDICTS THE RISK OF HOSPITALIZATION AND MORTALITY COMPARED TO OTHER NON-INVASIVE METHODS OF NUTRITIONAL ASSESSMENT

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Background. Nutritional status evaluation in cirrhotic patients is a complex procedure due to the presence of complications such as ascites and hepatic encephalopathy. Nutritional diagnosis needs to be accurate given its association with the development of complications and mortality. The main objective methods for evaluating body composition are imaging methods such as CT-scan and magnetic resonance, however, they are unfeasible for nutritional monitoring because of their cost, their time to obtain and their exposure to radiation. On the other hand, there are several simple nutritional markers such as the cut-off points of the body mass index standardized for the presence of ascites (BMIa), the triceps skinfold (TSF), the mid-arm circumference (MAMC) and the hand-grip strength (HGS) that have been proven to be useful due to their high availability and ease of use. The most accepted indicators are the MAMC and the HSG, while the TSF and the BMIa, despite being used in several centers, are believed to be less sensitive. Aim: To evaluate the prognostic ability of diverse nutritional indicators (BMIa, MAMC, TSF, HGS) on patients with liver cirrhosis. **Material and methods.** This was an ambispective cohort study with 24 months of follow-up in patients diagnosed with liver cirrhosis from the Department of Gastroenterology at INCMNSZ. A clinical evaluation (presence of complications and number of hospitalizations) and a nutritional evaluation (BMIa, MAMC, TSF, HGS) were made. Descriptive statistics, Student's T-test, Kaplan-Meier curves and Cox regression were used. **Results.** 149 patients were included of whom 100 were women. Patients were categorized into Child-Pugh A: 39%, B: 32.8%, C: 28.2%, the median of MELD was 12, and the most common etiology was HCV 34 %. The baseline nutritional characteristics were: BMIa 26.3 ± 5.2, TSF 20 ± 8, HGS 15 ± 8.9, MAC 21.5 ± 4.2. The percentages of malnutrition (MN) obtained by each method were: BMIa adjusted for ascites 8.1%, TSF 16.7%, MAMC 51.6%, HGS 87.9%. Regarding the outcomes, only malnutrition diagnosed by MACM showed statistical significance being able to predict earlier hospitalization time, observing the outcome 5.3 months before the group without malnutrition by MAMC, a similar trend was observed when HGS was used, although it did not reach statistical significance. In terms of mortality prediction, only MAMC was able to predict this outcome, observing that the malnourished group presented it 8 months earlier than the group without MAMC malnutrition; the rest of the nutritional markers did not show any difference. **Conclusion.** In this cohort of patients with cirrhosis, the MAMC proved to be a nutritional marker of great utility not only to diagnose malnutrition but to predict adverse outcomes, including mortality. None of the other nutritional markers evaluated were associated with the prognosis.

74 ORAL
VALIDATION OF THE CRITICAL FLICKER FREQUENCY (CFF) TEST IN MEXICAN POPULATION AND ITS PROGNOSTIC IMPLICATIONS

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Background. Hepatic encephalopathy (HE) is a neuropsychiatric syndrome could be present as overt (OHE) and covert (CHE), which can be detected only by specialized tests. One of these tests is the Critical Flicker Frequency (CFF) which measures the ability of the central nervous system to detect the flicker of light within a specialized equipment and its main advantage is that it does not depend on the level of education,

Table 1 (VII. 49). Tables incidence of hospitalization and mortality (month follow-up).

Diagnostic method	Time to first hospitalization	P value	Time to death	P value
BMI ascites MN	5.7 ± 2.4	0.081	8.0± 2.8	0.33
BMI ascites Normal	8.0 ± 0.7		11.0± 1.9	
TSF MN	6.6 ± 1.3	0.35	8.3± 2.7	0.42
TSF Normal	8.1 ± 0.8		11.3± 2.1	
MAMC MN	5.3 ± 0.8	0.001	7.7± 1.7	0.002
MAMC Normal	10.6 ± 1.1		15.7± 3.2	
HGS MN	7.3 ± 0.7	0.07	10.7± 1.8	0.69
HGS Normal	13 ± 3.4		13.6± 6.3	

Table 1 (VII.74). Clinical and neuropsychometric characterstics of the patients' cohorts.

	Child-Pugh	MELD	CFF	CFF: Child A	CFF: Child B	CFF: Child C
Cohort 2	7.15±2.1	10.9±4.2	42.3±6.4	44.3±5.8	39.4±5.9	37.3 ± 3.4
Cohort 3	8 ±1.7	12.7±4.6	39.8±4.14	41.9±3.7	39.8±4.2	37 ± 3.1

in Mexico only PHES test is validated for the diagnosis of CHE. **Aim.** To evaluate the validity and prognostic implications of CFF in Mexican population. **Material and methods.** Prospective cohort study conducted in the Department of Gastroenterology of INCMNSZ. Three different cohorts were evaluated, Cohort 1: Healthy volunteers 2009-2013 (estimation cohort), Cohort 2: Cirrhotic patients 2009-2013 (estimation cohort), Cohort 3: Cirrhotic patients 2014-2017 (validation cohort). 48 months of follow-up were established. A clinical, biochemical and neuropsychometric evaluation was carried out. Descriptive statistics, Bland-Altman method, ROC curve, Student's t-test, Mann-Whitney U, as well as Kaplan-Meier curves were used. **Results.** A total of 479 participants were included (Cohort 1: 361 participants / Cohort 2: 61 patients / Cohort 3: 57 patients). In cohort 1, the median age was 43 years (27-56), the median CFF was 42.4Hz (39.7-45.7) and PHES was 0 (-1 - 1). The cut-off point of 37 Hz was obtained when comparing CFF against PHES by ROC curve analysis (Sens: 56.5% and Esp. 85.9% with an RV+ of 4.01 and an RV- of 0.51, with a value of $p < 0.0001$). Characteristics of cohorts 2 and 3 are shown in table 1. Kaplan-Meier curves were created in cohorts 2 and 3 to estimate the incidence of OHE according to the proposed 37Hz cut-off point, as well as the international cut-off points 38 and 39. In cohort 2 when the cut-off point was > 37 Hz, the incidence of OHE was 34.1 months compared to those with CFF < 37 Hz: 27.6 months ($p = 0.002$), 38 Hz also showed significant difference, although there was an approximation of the curves ($p = 0.001$), and 39Hz did not show significance. The usefulness of the cut-off point was confirmed in cohort 3, again with a CFF > 37 Hz, the incidence of OHE was at 39.4 months compared to those with CFF < 37Hz, whose incidence was at 27.6 months ($p = 0.002$), in this cohort 38Hz and 39 Hz also showed significance ($p = 0.001$ and $p = 0.003$). **Conclusion.** This study was able to validate the CFF test in Mexican population for the diagnosis of CHE and prediction of OHE. Now there are two validated tests PHES and CFF to obtain the CHE diagnosis. The cutoff point estimated and validated by these cohorts is < 37Hz.

88 CARTEL
CASE-CONTROL STUDY TO IDENTIFY FACTORS RELATED TO POST-PARACENTESIS FISTULA DEVELOPMENT

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Background. Post-paracentesis fistula (PPF) is a rare complication. In the literature, there are few studies describing this complication. Until now, risk factors for FPP have not been known. **Objectives.** To describe the characteristics of patients with FPP and compare them with controls that did not develop FPP. **Material and methods.** Observational, analytical study, type cases and controls, included patients admitted by ascites of any etiology, to perform diagnostic paracentesis and/or evacuation. The cases were a patient who developed FPP and controls those who did not develop FPP. Descriptive statistics, qualitative variables were summarized by frequencies and percentages and quantitative variables as mean ± SD. To compare between groups, for dichotomous variables χ^2 or Fisher's exact test was used, and for quantitative Student's t variables. A value of $P < 0.05$ was considered significant. **Results.** Thirty-five cases were analyzed, etiology of the cirrhosis predominated (30 cases): 15 (42.9%) alcohol, 4 (11.4%) nonalcoholic steatohepatitis, 5 (14.3%) chronic hepatitis C, 6 (17.1%) origin in study; and 5 cases (14.3%) ascites of non-cirrhotic origin in the study. 11 patients (31.4%) presented FPP. The comparison is shown in table 1. **Conclusions.** Factors related to the procedure that influence the development of fistulas are: the puncture site, number of attempts, paracentesis performed by a non-gastroenterologist and those related to the patient were high abdominal fat measured by plicometry, as well as BMI in overweight which were significant statistics.

There was no sponsorship for this work.

Table 1 (VII. 88). Comparison between characteristics of patients with development of FPP *vs.* patients without FPP.

Characteristic evaluated	Cases (FPP) (n = 11)	Controls without FPP (n = 24)	P
Puncture site	9 (81.8)	0 (0)	< 0.0001
Two or more puncture attempts	10 (90.9)	0 (0)	< 0.0001
Paracentesis performed by a doctor no gastroenterologist	9 (81.8%)	4 (16.7)	< 0.0001
Plyometrics of the abdominal adipose panniculus	34.1 ± 6.7	21.5 ± 4.5	< 0.0001
Weight (kg)	74.3 ± 7.3	63.4 ± 7.5	< 0.0001
BMI (kg/m^2)	28.8 ± 2.4	24.8 ± 2.1	< 0.0001

93 CARTEL
CORRELATION BETWEEN CRITICAL FREQUENCY OF FLASHING AND MELD NA

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Introduction. The minimal hepatic encephalopathy (MHE) is the presence of alterations in psychometric tests or clinical signs of brain dysfunction in patients with liver cirrhosis with reduced attention, memory and visual-motor coordination, present in 22-74%, however underdiagnosed. The measurement of the critical frequency of flicker (FCP) is a simple, accurate and safe method whose result is not influenced by age or level of education and does not present a learning phenomenon. Performing this scrutiny test in all patients requires special equipment and time for evaluation. The Meld Na score is used to assess the severity of chronic disease and predict mortality at 3 months, so we suggest doing it to identify patients who are susceptible to MHE because it significantly deteriorates quality of life. **Objective.** To determine if there is a correlation between the FCP score and the Meld Na score for classifying patients susceptible to MHE in cirrhotic patients. **Material and methods.** Analytical, cross-sectional study in patients with hepatic cirrhosis of Hospital Juárez de México from September 2017 to February 2018, in which cirrhotic patients without hepatic encephalopathy underwent CPF using the Hepatonorm Analyzer Version 2.0, we took a cut score of < 42 Hz and we determine the score Meld Na > 14. The statistical program SPSS version 22.0 was used, considering $p < 0.05$ statistically significant. **Results.** 55 patients were included, the average age was 55 years of age, 58% (n = 32) of the male sex, the majority were associated with alcohol (43%). The average FCP was 41.7 HZ and Meld Na 13.1. A correlation was made between the FCP of (< 42 HZ) to identify susceptible patients with Meld Na (> 14), finding 15 patients with a value of p 0.24 being not statistically significant. **Conclusions.** There is no correlation between the score of Meld Na and FCP to classify patients at risk of MHE, so we will continue to perform screening in all patients diagnosed with liver cirrhosis.

Conflict of interests: The authors declare no conflict of interests.

97 CARTEL
NEW ADDITIVES IN THE HTK PRESERVATION SOLUTION TO IMPROVE THE VIABILITY OF LIVER GRAFTS FROM OLD DONORS

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Introduction and objectives. The lack of optimal organs available for liver transplantation has led transplant centers to accept marginal organs, such as liver grafts from old donors. However, these grafts show poor tolerance to ischemia-reperfusion (I/R) injury associated with liver transplantation and a high risk of initial poor graft function after transplantation. Reducing the susceptibility of these marginal grafts to the I/R injury, could favor its use in liver transplantation. In the present work, it was investigated whether the addition of caffeine and melatonin in the HTK preservation solution is able to reduce the I/R injury associated with liver transplantation of grafts from old donors. **Material and methods.** Liver grafts from old Wistar rats were preserved at 4°C during 6 h. The grafts were preserved only in HTK preservation solution, or in HTK solution enriched with caffeine, melatonin or the combination of both drugs. After the preservation period transaminases were determined, and also were evaluated the lipid content, ATP, and inflammation in liver tissue. **Results.** The addition of caffeine or melatonin to the HTK preservation solution reduced transaminase levels when compared to liver grafts preserved only in HTK. The combination of both drugs as additives in the HTK preservation solution resulted in a greater reduction of transaminases in comparison with the levels observed when each drug was added separately. The addition of caffeine or melatonin in HTK solution reduced the triglyceride content and increased ATP levels in liver tissue. TNFα in liver tissue was reduced only when HTK solution was enriched with melatonin separately. The combination of both drugs in the HTK preservation solution improved all the benefits observed when each drug was added separately: reduction of triglycerides and TNFα, and increase of ATP in liver tissue, in a greater extent to the values obtained when melatonin or caffeine was added separately. **Conclusions.** The enrichment of HTK preservation solution with a combination of caffeine and melatonin reduced I/R injury in liver grafts from old donors. This protective effect is associated with a reduction in lipid content and inflammation and with an increase in ATP levels in liver tissue.

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98 ORAL
EVALUATION OF THE GALLIC ACID EFFECT ON BIOENERGETICS METABOLISM OF HUH7 HEPATOCARCINOMA CELLS INFECTED WITH HEPATITIS C VIRUS

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Background and aim. The main side effects of hepatitis C virus (HCV) infection are cirrhosis and liver cancer, which are caused by metabolic changes due to the oxidative stress generated by the virus. Therefore, it is important to study the metabolic effects to understand these oxidative mechanisms. That is why there are antioxidant therapies that counteract those metabolic changes. For this reason, gallic acid (GA), a phenol present in plants and fruits, were used to evaluate the effect on the metabolism of Huh7-HCV cells. **Material and methods.** Parental and replicon Huh7 cells (4 x 10^5) were treated 3h with 100 and 200 µM GA to evaluate bioenergetic parameters (respiration, glycolytic and mitochondrial capacity). They were cultured in medium with 25mM glucose and 2% FBS, the respiratory chain and proton channel were blocked, and the final metabolic products were measured in real time. In addition, at 24 h, the viability was evaluated with propidium iodide and mitochondrial reactive oxygen species levels were evaluate with dihydroetidium, both on a flow cytometer. **Results.** Cell viability was not significantly affected in parental and replicon cells with GA (5%). Both cell lines maintained basal respiration levels like each other (15-20 pmol O_2/min/µg). Replicon cells showed lower glycolysis levels compared to parental cells, even though cellular respiration were increase with oligomycin, indicating an oxidative phosphorylation deficiency (30%). The ATP formation was lower (20%) in the parental than replicon cells (13-16 pmol O_2/min/µg). The respiration decreased (40%) in replicon cells (32-14 pmol O_2/min/µg in parental cells and 26-7 pmol O_2/min/µg in replicon cells). The mitochondrial superoxide anion levels were not affect by GA in any cell line. **Conclusions.** These results indicate that parental cells showed a bioenergetic profile more stable than replicon cells with GA treatment. Treated replicon cells showed higher ATP levels but a deficiency in glycolysis was observed compared to parental cells. This glycolysis effect could be associated to ATP decrease or glucose supply because glycolysis could compensate the reduction of oxidative phosphorylation. These results indicating a slower metabolism of Huh7 replicon cells with GA treatment.
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104 CARTEL
CHARACTERIZATION OF LIVER ABSCESSES IN A RETROSPECTIVE COHORT

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Introduction. In Mexico, the annual incidence of amoebic liver abscesses is 6.7 per 100,000 population in 2,000, with a male / female ratio of 12:1. The incidence of pyogenic liver abscess varies geographically, ranges from 0.007 to 0.016% of hospital admissions, 11 per million in the general population and between 0.29 and 1.47% in series of autopsies. The male: female ratio is 2.5: 1. **Objective.** To characterize pyogenic and amoebic liver abscesses in a retrospective cohort. **Material and methods.** Retrospective cohort conducted at the Instituto Nacional de Ciencias Médicas y Nutrición "Salvador Zubirán". Inclusion criteria: patients with 1 or more abscesses regardless of the origin and etiology of them. Other diagnoses, incomplete records and abscesses in another site were excluded. We analyzed demographic variables of age, sex, type and number of abscesses and clinical variables: etiological agents, comorbidities, days of hospital stay, laboratory and cabinet studies, therapeutic treatment and associated complications. The distribution of data was analyzed by Kolmogorov-Smirnov test, descriptive statistics frequencies, Student's T-test or U-Mann Whitney test and the χ^2 test. The SPSS v.20 software was used. **Results.** The median age was 52 years, the predominant masculine gender (59%). Pyogenic abscess predominated in 82.6%. The most common symptoms were fever and pain in the right hypochondrium. The main comorbidities: type 2 diabetes mellitus (31.7%) and systemic hypertension (19.3%). Multiple distribution predominated in the case of pyogenic (55.6%) and amoebic (62.5%), also the location was in the right hepatic lobe in the three types of abscesses and those < 5 cm were the most frequent. The most frequent etiologic agent in pyogenic and mixed hepatic abscesses (137) was *E. coli* (24%). The main scheme of antibiotics used was third-generation cephalosporins (ceftriaxone and ceftazidime) plus metronidazole (60.2%). The main complications that occurred were septic shock, biliary fistula and recurrence of liver abscess (5, 1.9 and 1.9% respectively). **Conclusion.** Pyogenic liver abscesses occurred more frequently. Mortality and complications were low, due to the adequate response to treatment and the current availability of interventional medicine.
The authors declares that there is no conflict of interest.

124 CARTEL
HEPATIC INJURY INDUCED BY DRUGS. REPORT OF 4 CASES OF THE CENTRAL MILITARY HOSPITAL

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Introduction. Hepatotoxicity due to drugs and herbal or dietary supplements is an important entity in clinical practice. Its diagnosis requires a high index of clinical suspicion as well as a

Table 1 (VII.124).

		BT mg/dL	BI mg/dL	BD mg/dL	TGP U/L	TGO U/L	FA U/L	INR	TGP/FA (R)
Patient 1	ORLISTAT	3.42	1.51	1.91	1093	1559	198	1.94	≥ 5 hepatocelular
Patient 2	Herbalife	7.43	2.48	4.96	784	746	170	1.76	< 5 mixed
Patient 3	Herbalife	6.3	1.0	5.3	586	536	235	2.3	≥ 5 hepatocelular
Patient 4	Semilla de zopilote	31.84	11	20.84	459	282	133	2.7	<5 mixed

Table 1 (VII.125).

Comparability parameters	Chronic hepatitis n =18	Child-Pugh A n = 25	Child-Pugh B n = 14	Child-Pugh C n = 3
Intake (kcal)	1444.8 ± 118.1	1371.1 ±115.5	1394.1 ± 110.0	897.5 ± 503.4
Weight (kg)	76.2 ± 11.8	72.0 ±15.4	63.7 ± 11.2	51.4 ± 11.2
Body fat (%)	37.5 ± 6.9	34.9 ±6.3	31.6 ± 7.5	24.2 ± 0.1
MNA (score)	23.1 ± 5.0	21.6 ±3.1	20.5 ± 2.7	18.0 ± 4.2

diagnosis of exclusion of all probable causes of liver failure. Clinical assessment scales have been developed for the diagnosis and causality of this disease (CIOMS or RUCAM and Maria and Vitorino). Most patients tend to improve with drug discontinuation in addition to symptomatic treatment. **Objective.** Report of 4 clinical cases of patients with acute hepatic injury induced by drugs in the Central Military Hospital of Mexico City. **Material and methods.** We included 4 patients with acute liver failure caused by drugs, herbal or dietary supplements. **Results.** The 4 patients had a history of drug intake, herbalism or dietary supplements, all with the porpouse of losing weight. Upon your entry with the following laboratory. Differential diagnosis was made for acute liver disease due to viruses, autoimmune diseases or storage diseases, all with negative results. Imaging studies with normal-sized liver, normal borders, without intrahepatic or extrahepatic dilation of the bile duct. Liver biopsy with histological findings that suggest hepatotoxicity such as centrilobular predominance necrosis, microvesicular steatosis, mixed lesions (necrosis and cholestasis) and inflammatory infiltrate. All with criteria of hepatotoxicity and antecedent of consumption of some drug, herbal or dietary supplement to lose weight. RUCAM score greater than 6 and improvement after the suspension of the etiological factor. A death by multiple organic failure. **Conclusions.** The supplements used for weight reduction are the products that have reported the most hepatotoxicity in recent times. There is no specific treatment or antidote for this etiology, the main treatment is the immediate withdrawal of the suspect product and the symp tomatic and support measures.

125 CARTEL
EVALUATION OF NUTRITIONAL STATUS AND BODY COMPOSITION IN PATIENTS WITH CHRONIC HEPATOPATHY AND HEPATIC CIRRHOSIS

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Introduction. Malnutrition (MN) is common in chronic liver disease, it identifies a variety of factors that influence its development such as poor dietary intake, malabsorption, alterations in metabolism of nutrients and hypermetabolism. The MN in cirrhotic patient is associated with an increased risk of complications and death, so assessment of nutritional status has taken great importance because of its prognostic value. It has been found in patients with liver cirrhosis and MN a risk up to 4 times higher to develop complications such as recurrent hepatic encephalopathy, gastrointestinal bleeding, ascites and infections compared with those without MN. Regarding mortality, it has been reported that a malnourished cirrhotic individual is up to 17 times more likely to die than one without MN. **Aim.** To evaluate nutritional status in patients with chronic liver disease and liver cirrhosis with different etiology. **Material and methods.** 60 patients with chronic hepatitis and liver cirrhosis from two Mexican centers were included, based on anthropometric, biochemical, clinical and dietary criteria, as well as the Mini Nutritional Assessmente (MNA) survey. These parameters were evaluated transversally, dividing the total of patients into four groups according to their functional category, a) chronic hepatitis, b) liver cirrhosis with Child-Pugh A, c) liver cirrhosis with Child-Pugh B and d) cirrhosis hepatic with Child-Pugh C. **Results.** Muscle mass in patients with chronic hepatitis (27.5 ± 7.2 kg) was higher in the groups with liver cirrhosis according to the functional category, Child-Pugh A (27.8 ± 8.4 kg) B (20.9 ± 5.6 kg) and C (11.8) ± 6.5 kg) and the following differences between groups were found (Table 1). **Conclusion:** Evaluation of nutritional status in patients with chronic liver disease and liver cirrhosis is essential to reduce the prevalence of complications and mortality in these patients, mainly in those with advanced stages of the disease.

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126 CARTEL
ANTIMICROBIAL RESISTANCE AND MORTALITY IN PATIENTS WITH SPONTANEOUS BACTERIAL PERITONITIS OF THE JUAREZ HOSPITAL OF MEXICO

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Background and objectives. The main pathogens associated with spontaneous bacterial peritonitis (SBP) are *E. coli* (46%), *Streptococcus* (19%) and *Klebsiella* (9%) with good response to treatment with cephalosporins in the USA and European countries; there has been a worldwide increase in antibiotic resistance. The objectives are to know the most frequent pathogens of SBP, the primary objective to determine their response to conventional treatment and antimicrobial resistance in cirrhotic patients with SBP from the Gastroenterology Service of the Hospital Juárez de México. The secondary objective was to determine in-hospital mortality in patients with SBP. **Material and methods.** A descriptive, prospective, cross-sectional study was performed in decompensated cirrhotic patients with SBP at the Hospital Juárez de México in the period March 2016-March 2017. **Results.** 34 patients with SBP were included. The most frequent causative agent was *E. coli* and *E. coli* Extendedspectrum beta-lactamase (ESBL). The result of the antibiograms shows a high resistance (80-100%) to the treatment with third-generation cephalosporins and quinolones; in addition, 60% of multidrug- resistant pathogens (MDR) were found: *E. coli* BLEE 26%, and the rest each with 4% (*S. aureus* MRS, *Candida albicans*, *Sterotrophomonas maltophila*, *Pseudomonas putid*, *Serratia*, vancomycin resistant (VRE)) *Enterococci*. In-hospital mortality was documented in patients with 92% MDR and 60% in non-MDR PBE (p: 0.03). **Conclusions.** The most common pathogen was *E. coli* and *E. coli* ESBL, with resistance to treatment 80-100% recommended as first-line international guidelines; the in-hospital mortality of patients with MDR and non-MDR PBE was higher than that described in the literature. Therefore, in our population, the first-line treatment should be meropenem plus vancomycin or linezolid.

127 CARTEL
DRUG INDUCED LIVER INJURY: A DIAGNOSTIC CHALLENGE? CASE REPORT

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Introduction. More than 50 years ago was first described drug induced liver injury (DILI). By 1980, more than 1,000 drugs had been described to cause DILI, making it the most common cause of acute liver failure. Different pathophysiologic mechanisms have been described, with various clinical presentations, making DILI a diagnostic challenge nowadays. **Objective.** To present a case report of DILI secondary to Ciprofloxacin. **Case report.** 41-year-old woman with no known diseases, no alcohol, drugs or herbal use, no blood transfusions, no tattoos. Eight days prior to admission, she started with asthenia and adynamia related to nausea and vomits, with prescription of Ciprofloxacin BID; 5 days prior to admission, she developed epigastric pain exacerbated by food. 48 h prior to admission she noted jaundice, without pruritus, choluria or acholia. Physical exam: adequate neurological status; jaundice, abdomen without collateral circulation, adequate bowel sounds, no organomegaly and no pain; liver measurement 10 cm by percussion in right midclavicular line, no hepatodynia. Liver chemistry: AST 676 UI/L, ALT 600 UI/L, GGT 112 IU/L, FA 305 IU/L, BT 3.5 mg/dL, BD 2.3 mg/dL, Albumin 2.9 mg/dL, DHL 469; Normal CBC, PT 16.6 s, INR 1.49. Liver ultrasound was unremarkable. Serology for hepatitis A, hepatitis B, hepatitis C, and hepatitis E viruses resulted negative, ANA: 1:160, ASMA: 1:160, AMA: negative, IgG: 1200 mg/dL. R ratio: 6.3 (hepatocellular), RUCAM 3 with positive autoimmune tests. She underwent liver biopsy with inflammatory linfocitary infiltrate to the limiting plate, with no extension of fibrosis, normal vascular and ductal structures. She was followed with liver chemistry for 3 months, with total biochemical recovery and no symptoms under no treatment. **Conclusions.** Due to its pathophysiological complexity, and the different clinical, biochemical and histological presentations, DILI remains as an authentic diagnostic challenge. Liver biopsy may be useful in many cases, and it is the main liver damage indicator, even if it is not able to distinguish between the differential diagnoses. In the presence of high suspicion of DILI, an appropriate approach is needed in order to avoid acute liver failure and its mortality, reported to occur in up to 10% of cases.
Conflict of interest: The previous work had no governmental nor commercial sponsorship.

131 CARTEL
PREVALENCE OF LIVER FIBRORIS, BY NON-INVASIVE METHODS IN PATIENTS WITH PSORIASIS

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Background and aim. Liver injury is an adverse effect of systemic treatment in patients with psoriasis. Prevalence of liver fibrosis, diagnosed by non-invasive methods is unknown. The aim of this study was to determinate prevalence of liver fibrosis by non-invasive methods in patients with psoriasis. **Material and methods.** It is a cross-sectional study of patients with diagnosis of psoriasis under systemic treatment. Patients were recruited at 3 different specialized dermatologic centers. Liver fibrosis was determined by serologic markers (NAFLD Score, APRI and FIB4), and transient elastography was performed in each patient. Demographic, biochemical were analyzed. Exposure of methotrexate was recruited. Liver steatosis was determined by HSI Score. **Results.** 160 patients were evaluated, 62.5% (n = 100) of patients were men, age and body mass index were 53.3 ± 12.9 years and 29.2 ± 4.9 kg/m^2. Prevalence of diabetes and high blood pressure were 21.1% (n = 37) and 29.4

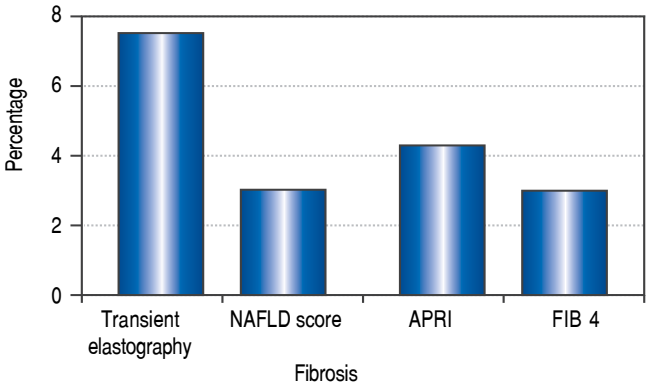

Figure 1 (VII.131). *Prevalence of liver fibrosis by non-invasive methods in patients with psoriasis.*

(n = 47) respectively. 85.6% (n = 137) of patients had methotrexate exposure history. According to HSI score, 70.6% (n = 113) of patients had liver steatosis. Prevalence of liver fibrosis by each non-invasive method had showed in figure 1. Comparing to transient elastography, APRI score showed better area under operator receiver curve (0.702) for advanced liver fibrosis. Exposure to methotrexate was not related with presence of liver fibrosis. **Conclusion.** Prevalence of liver fibrosis in patients with psoriasis is high. APRI score could be used as diagnosis biomarker in absence of transient elastography.

04 ORAL
PREDICTIVE FACTORS RELATED TO TREATMENT FAILURE WITH URSODEOXYCHOLIC ACID IN PATIENTS WITH PRIMARY BILIARY CHOLANGITIS

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Introduction and aim. Ursodeoxycholic acid (UDCA) is the standard therapy for primary biliary cholangitis (PBC); however, not all patients respond. Our aim was to identify risk factors related to treatment failure with UDCA in patients with PBC. **Material and methods.** We included patients with PBC and the response to treatment with UDCA was evaluated according with Barcelona criteria. We compared characteristics between responders and non-responders to UDCA, and to evaluate risk factors related to treatment failure we performed a multivariate logistic regression analysis. A $P < 0.05$ value was considered significant. **Results.** We included 119 patients with PBC, 98.3% were women, mean age was 49.9 ± 11.4 year-old. All received UDCA at a dose between 13 to 15 mg/kg/day and reported adherence to treatment; nevertheless, according with Barcelona criteria, 49 (41.2%) were classified as non-responders. The univariate and multivariate analyses are summarized in tables 1 and 2. **Conclusions.** Statins use improved response to UDCA in patients with PBC. The overlap with AIH, the presence of ad-

Table 1 (VII.04). Comparison between basal clinical and biochemical characteristics of patients with PBC responders and non-responders to UDCA treatment according with the Barcelona criteria: Univariate analysis.

Variable	Responders (n = 70)	Non- responders (n = 49)	P	OR (95%CI)
Age, year-old*	50.5 ± 11.8	48.9 ± 10.9	0.46	NA
Alkaline phosphatase, U/L	480 (170-1556)	666 (143-1445)	0.01	NA
Platelets, x 10^9/L	200 (78-436)	118 (52-518)	< 0.0001	NA
Total bilirubin, mg/dL	1.6 (1.0-3.0)	1.9 (1.0-6.4)	< 0.0001	NA
ALT, U/L	75 (21-185)	102 (19-456)	0.07	NA
AST, U/L	77 (23-204)	98 (18-333)	0.12	NA
GGT, U/L	354 (86-1349)	444 (99-1238)	0.05	NA
Cholesterol, mg/dL	215 (85-779)	198 (85-409)	0.29	NA
Albumin, g/dL	4.0 (2.6-4.8)	3.5 (2.0-4.8)	< 0.0001	NA
INR1.0 (0.7-1.5)	1.0 (0.8-1.5)		0.50	NA
Fibrosis F3 or F4, n (%)	18 (25.7)	41 (83.7)	<0.0001	14.8 (5.8-37.4)
Obesity, n (%)	22 (31.4)	40 (81.6)	< 0.0001	9.7 (4.0-23.4)
AIH, n (%)	5 (7.1)	21 (42.9)	< 0.0001	9.8 (3.3-28.5)
Dyslipidemia, n (%)	44 (62.9)	11 (22.4)	< 0.0001	0.2 (0.08-0.4)
Statins use, n (%)	42 (60)	8 (16.3)	< 0.0001	0.1 (0.05-0.3)
Fibrates use, n (%)	33 (47.1)	23 (46.9)	0.98	1.0 (0.5-2.1)
Evolution in years, n (%)				
< 5 years	37 (52.8)	7 (14.3)		
5 - 10 years	27 (38.6)	22 (44.9)	0.004	4.3 (1.6-11.5)
> 10 years	6 (8.6)	20 (40.8)	< 0.0001	17.6 (5.2-59.6)

AIH: autoimmune hepatitis. ALT: alanine aminotransferase. AST: aspartate amino transferase. CI: confidence interval. F3: advanced fibrosis. F4: cirrhosis. GGT: gamma glutamiltransferase. INR: International Normalized Ratio. OR: odds ratio. PBC: primary biliary cholangitis. UDCA: ursodeoxycholic acid. * mean ± SD. Comparison with Student's t test. Quantitative variables with non-parametric distribution are expressed as median and range. Comparison with Mann-Whitney's U test. Qualitative variables were compared with χ^2, or exact Fisher's test. $P < 0.05$ was considered significant.

Table 2 (VII.04). Multivariate analysis contrasting factors related to treatment failure to UDCA in patients with PBC according with Barcelona criteria.

Variable	OR (95% CI)	P
Fibrosis F3 or F4	8.1 (2.2-29.7)	0.002
Obesity	4.4 (1.3-15.4)	0.02
AIH	20.1 (2.8-146.6)	0.003
Dyslipidemia	0.3 (0.08-1.1)	0.08
Statins use	0.07 (0.01-0.34)	0.001
Time of evolution		
5 - 10 years	0.8 (0.2-3.5)	0.74
> 10 years	2.9 (0.5-16.9)	0.23

AIH: autoimmune hepatitis. F3: advanced fibrosis. F4: cirrhosis. PBC: primary biliary cholangitis. UDCA: ursodeoxycholic acid. Binary logistic regression, P < 0.05 was considered significant.

vanced fibrosis or cirrhosis, and obesity are factors related to treatment failure with UDCA according to Barcelona criteria in patients with PBC.

VIII. TRANSPLATATION/LIVER SURGERY

20 CARTEL
RECURRENCE OF AUTOIMMUNE DISEASES AFTER LIVER TRANSPLANTATION IN A TRANSPLANTATION REFERENCE CENTER

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Background. In Mexico, the most frequent causes of liver transplantation are HCV infection, alcohol and autoimmune diseases. The recurrence of hepatic autoimmune diseases after transplantation is not uncommon. In Mexico there are no reports of recurrence of these entities after liver transplantation **Aim.** Establish the recurrence of liver autoimmune diseases after transplantation, time to recurrence and impact on graft. **Material and methods.** Unicentric, descriptive, observational and retrospective study. Patients post-transplanted for autoimmune diseases in INCMNSZ from the year 2002 to 2017. Recurrence was documented by clinical, biochemical and histopathological criteria. Impact of graft recurrence based on non-invasive methods (APRI and FIB-4). Baseline characteristics were used Kruskall-Wallis, comparison of groups and qualitative variables was used χ^2 or Fisher's exact and for factors of disease recurrence multivariate logistic regression analysis was performed. Recurrence prevalences were used for log-rank test and Kaplan Meier curves. Quantitative variables were represented in medians and percentiles and qualitative in frequency and percentage. Significant statistics $p < 0.05$. **Results.** 300 liver transplants were performed in the study period, 78 (26%) due to autoimmunity, 18 (23%) recurred. Mean age 47 years, predominance of female sex and 66% were in Child C and median MELD 19 points. Rejection prior to recurrence in 20.5%. Time to average recurrence of 9 months. Variables that were associated with recurrence risk were rejection and MELD. By APRI it was observed in 50% of the patients who recurred a probable fibrosis and in 5.6% significant fibrosis was found. **Conclusions.** Liver transplantation in autoimmune diseases has good results. Recurrence is frequent, graft survival is rarely affected. In this study, recurrence rates similar to those described were reported and rejection and MELD prior to transplantation were found as risk factors.
This study did not receive sponsorship.

83 CARTEL
BIOCHEMICAL DIFFERENCES OF THE METABOLIC SYNDROME BY ETIOLOGY IN LIVER TRANSPLANTATION PATIENTS

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Introduction. Metabolic syndrome (MS) is associated with an increase in the morbidity and mortality in the liver transplant, therefore is important to identify the biochemical components of the MS in this group. It has been studied that patients with alcoholic etiology are predisposed to have MS after transplantation *vs.* non-alcoholic fatty liver disease; it is also reported that patients transplanted by HCV are associated with a higher prevalence of MS and insulin resistance. The MS is favored by obesity and immunosuppressive drugs; recent studies found that the patients develop after sixth month of the procedure. **Objective.** To describe the differences in the biochemical markers of the MS according to the etiology of the transplantation (OLT). **Material and methods.** Patients transplanted between 2013 and 2017, of any sex, any etiology, which would have biochemical markers of the MS, liver function tests and other indicators of nutritional components were registered. T-student and Kruskal Wallis tests were used with statistical package SPSS v.20.0 to compare 6 different pathologies causing the transplantation: hepatitis C virus (HCV), cryptogenic cirrhosis (CC), primary biliary cirrhosis (PBC), autoimmune hepatitis (AIH), alcoholic liver disease (ALD) and others. **Results.** In a group of 219; 48.4% were men, 51.6% were women, with a median age of 53 years, 33.8 ± 17.5 months after transplantation, it was found patients due to HCV, had a higher number of altered biochemical components, unlike patients who had CC, PBC, AIH, ALD and other (cholesterol total $p = 0.019$, LDL cholesterol $p = 0.018$ and HDL $p = 0.016$). As a secondary finding, there were significant differences in serum levels of vitamin D3 $p = 0.001$, creatinine $p = 0.009$ and alkaline phosphatase $p = 0.007$. **Conclusions.** In this group of patients after OLT, differences were observed in the biochemical markers according to the etiology, being the group with HCV etiology which had the highest number of altered biochemical components, it is recommended this group need to be monitored after transplantation to avoid the presence of metabolic syndrome.
The authors declare no conflict of interests.

94 CARTEL
BODY COMPOSITION PHENOTYPE OF CARDIOVASCULAR RISK AFTER LIVER TRANSPLANTATION

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Background. Some authors consider non-alcoholic fatty liver disease (NAFLD) as the hepatic component of the metabolic syndrome; it is associated with increased cardiovascular risk, these associated to changes in body composition. It has been documented that patients undergoing liver transplantation (LT) have changes in body composition and increased cardiovascular risk, moreover if the LT is due to non-alcoholic steatohepatitis (NASH). **Objective.** To describe the difference in body composition after LT and compare it with a cohort of patients with NASH-cirrhosis. **Material and methods.** Body composition studies of 3 patient groups were reviewed: A: NASH-cirrhosis/without LT. B: pre-LT/without NASH, and C: post-LT/without NASH, from September 2017 to February 2018. Demographic and body composition parameters were obtained at rest by an 8 points impedance equipment. Statistical tests were used for the statistical analyses (t-Student and Kruskal-Wallis). **Results.** A total of 138 patients were included (A = 54, B = 46 and C = 38) with a mean age of 53 (± 12.3) years and the majority were women (67.4%). The body composition patterns were identified in the groups, finding that group A patients presented, as expected, a greater amount of visceral fat without differences against group C (3.7 L *vs.* 3.43 L, p = 0.33), on the other hand group B patients had a lower amount of visceral fat compared to A and C groups (B = 2.47 L *vs.* A = 3.7 L, and C = 3.43 L, P < 0.01). **Conclusion.** In this study we observed that body composition in post-LT/without NASH patients didn't show significant differences with that of patients with NASH-cirrhosis/without LT, showing a similar pattern of visceral fat accumulation. This study demonstrates that a body composition phenotype change exists after a LT, findings compatible with the literature that has reported a higher cardiovascular risk in this population.
Conflict of interests: The authors declare not conflict of interests.

120 CARTEL
BILIARY COMPLICATIONS IN ORTHOTROPIC LIVER TRANSPLANTATION: A MONITORINF OF SIX YEARS (2011-2017)

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Background. Biliary complications in orthotropic liver transplantation are one of the most important complications because they can cause graft dysfunction and death. **Objectives.** To determinate the incidence of biliary complications after hepatic transplantation and identify factors that propitiated this complication. **Material and methods.** A retrospective and descriptive study of biliary complications in orthotropic liver transplantation based on medical records of 71 patients. These patients had a hepatic transplantation between January 2011 and December 2017 in HG CMN La Raza. We selected patients that presented biliary complications. In this group we analyzed age, gender, the etiology of hepatic failure, MELD, MELD Na, donor age, the transplant time in which the complication appeared and the type of biliary complication. **Results.** 71 liver transplants were performed in the period from January 2011 to December 2017, of which 15 (21%) presented a biliary complication. The average age of the patients with a transplant was 42.86, of which 40% were women and 60% men; the most frequent cause for a hepatic transplantation was HCV (53%). The stenosis of the anastomosis site was the most frequent biliary complication, which occurred in 9 patients and 26% of biliary tract lesions presented at the third month post-transplant. **Conclusions.** Biliary complications after hepatic transplantation are frequent; the incidence of this complication in our institution was 21% (rate 9-30%).

121 CARTEL
MORTALITY ATLAS OF LIVER CIRRHOSIS IN MEXICO

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Introduction. Cirrhosis has been considered as one of the main causes of mortality in our country. However, few studies have focused on updating the atlas of this important condition nationwide fundamental for the planning and activation of better health care policies. **Aim.** To update on the mortality figures due to liver cirrhosis, to identify the main affected regions and to describe the mortality trends in the last 4 years. **Material and methods.** A "brief liver health questionnaire" was designed to obtain (a) demographic data, (b) economic indicators, (c) health infrastructure and (d) mortality indicators, and sent to all participating centers. INEGI and/or State Department of Health database and statistics were consulted, from 2013 to 2016 allowing us to estimate trends for 2017-2020. Annual mortality rates due to cirrhosis per 100,000 inhabitants were calculated, as well as incoming economic data (territorial GDPs and per capita), and indicators of poverty and social backwardness. **Results.** During the evaluated period, 143,683 people have died due to liver cirrhosis, with a growing national mortality rate switching from 28.4 to 31.7. The top 10 states affected by cirrhosis mortality included: Yucatán (51.4), Veracruz (48.2), Puebla (47.1), Morelos (42.9), Oaxaca (41.2), Chiapas (40.2), Querétaro (38.0), Campeche (36.3), Colima (34.8) and Hidalgo (34.7). The five states with the worst mortality rates have also been identified with high economic and social backwardness indicators that might be considered in the analysis of population risk, in addition to the well-known toxic, biological and metabolic causes. **Conclusion.** The national mortality rates due to liver cirrhosis depict a slight

Table 1 (VIII.121).

Type of Indicator	2013	2014	2015	2016
Total population	118.395.054	119.713.203	121.005.815	122.273.473
Total deaths	622.495	632.587	654.593	684.437
Deaths due to cirrhosis	34.801	34.470	35.685	38.727
Mortality rate due to cirrhosis	29.4	28.8	29.5	31.7
Deaths attributable to alcohol (%)	36.5	33.1%	32.1%	36.2%

trend to growth. Main affected territories include the south and central regions where the prevention, early diagnosis and timely treatment efforts should be implemented.

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122 CARTEL
COMPARISON OF TWO PSYCHOMETRIC TEST IN THE DIAGNOSIS OF MINIMAL ENCEPHALOPATHY

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Introduction. Diagnosis of Minimal Encephalopathy (ME) is suitable for support with neuropsychological and physiological assessment, because of subtle impairment in superior mental functions. The psychometric hepatic encephalopathy score (PHES) and the physiological test Critical Flicker Frequency (CFF) are the gold standard tests for ME diagnosis. Both PHES and CFF combined show sensibility (S) range 55-67% and specificity (E) range 75-83%, using PHES as the reference test. The Montreal Cognitive Assessment test (MoCA) is one of the most widely used test for detecting cognitive impairment which could be useful in ME detection. **Objectives.** The present research was aimed to identify if the MoCA test reaches scores as to be considered competitive in sensibility and specificity *vs.* the gold standard tests (PHES and CFF). **Material and methods.** Participated 84 patients diagnosed with hepatic cirrhosis 46.4% of women, 55.7 ± 10.6 years old. Each patient was evaluated for CFF and was administered PHES and MoCA tests. The presence of ME was determined following the PHES score criteria. Impairment regarding CFF was determined if the score was below 39Hz and impairment in MoCA was determined if the total score was below 26 (cut-off normative scores) Sensibility and specificity was calculated using contingency 2 x 2 tables. **Results.** According to PHES scores, 59 patients (70.2%) were diagnosed with ME. Using PHES as the reference test, the sensibility for CFF was 67.8% and the specificity was 64.0% and, for MoCA S = 86.4%, E = 36.0%. Comparing combined CFF and MoCA *vs.* PHES, was obtained S = 59.3% y E = 72.0%. The reference values for PHES are S = 30% and E = 89%. **Conclusions.** MoCA test showed higher sensibility than PHES but lower specificity. Comparing against combined values of the reference tests CFF and PHES, the MoCA test had a competitive value of sensibility and a slightly inferior value of specificity.

Conflict interest disclosure. This investigation was fully supported by CONACyT grant number 234269.

123 CARTEL
TRANSIENT ELASTOGRAPHY AS AN INDIRECT MARKER OF PORTAL HYPERTENSION IN PATIENTS WITH CIRRHOSIS

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Introduction. Portal pressure gradient measure represents the reference standard for determining the presence and severity of portal hypertension, nevertheless nowadays there are noninvasive methods to evaluate hepatic fibrosis such as transient elastography which can represent an alternative method. The aim of this study was to determinate if the value obtained in kilopascals in elastography can predict portal hypertension presence evaluated indirectly with clinical, endoscopic and ecographic evaluations. **Material and methods.** Patients of the Liver Clinic at Hospital General de México "Dr. Eduardo Liceaga" with compatible clinical criteria of chronic liver disease with a fibroscan were included. Data of indirect parameters or portal hypertension were collected: clinical (ascites, hemorrhage, platelets), echographic (splenomegaly, portal vein diameter, the presence of collaterals) endoscopic (hypertensive gastropathy, esophageal and gastric varices) and these were correlated with de transient elastography (fibroscan) value expressed in Kilopascals. Central tendency measures were used to describe demographic data. Correlations were evaluated calculating the Spearman correlation coefficient (Rho). A p value of < 0.05 was considered significative. Data were evaluated using the statistic program SPSS v. 24.0. **Results.** 95 patients were evaluated of which 39 (41%) were men and 56 (59%) women. Mean value of age was 50 ± 12. Respectively cirrhosis etiology, 53% (n = 21) patients had chronic hepatitis C diagnosis, 14% (n = 13) non alcoholic steatohepatitis, 12% (n = 11) primary biliary cholangitis and in the rest, 20% cirrhosis etiology was related to alcoholic liver disease, autoimmune hepatitis and overlap síndromes, chronic B hepatitis and cryptogenic with respect to the correlations, it was found that only between elastography (Kpa) and de portal vein diameter existed a correlation with a coefficient value of 0.347 (p = 0.01). Ther was no other correlations found between the rest of variables. **Conclusions.** There was only found a weak correlation between the portal vein diameter evaluated by ultrasound and the elastography value. Increasing the sample size could be useful to evaluate more evident correlation tendency between the portal hypertension parameters. The evaluation of

the elastography value in combination with other indirect markers could improve de predictions of clinical outcomes.

IX. HEPATIC TUMORS

47 CARTEL
EPIDEMIOLOGY AND TREATMENT OF HEPATOCELLULAR CARCINOMA IN THE HOSPITAL CENTRAL MILITAR (2010-2015)

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Background. Hepatocellular carcinoma is a frequent entity in the cirrhotic population, the epidemiological findings are diverse and vary according to the population group studied. There are different prognostic factors that directly or indirectly influence the survival of this group of patients. The therapeutic approach is individualized and there are different therapeutic modalities. **Objectives.** To evaluate the epidemiological findings, prognostic factors and the therapeutic approach of Hepatocellular Carcinoma in the Hospital Central Militar in the period from 2010 to 2015. **Material and methods.** Observational, descriptive, retrospective and cross-sectional study in which 116 patients with cirrhosis and hepatocellular carcinoma were included from 2010 to 2015, data were collected regarding etiology, degree of liver function (Child Pugh, MELD) and treatment established (BCLC), analyzing survival with the Kaplan Meier Method. **Results.** In our hospital, the most common cause of HCC was that secondary to cirrhosis due to non-alcoholic fatty liver. The female gender predominated over the male gender, a fact that does not coincide with that reported in world literature. The mean age of diagnosis of HCC was 66 years, similar to that reported in the world literature. The states of Veracruz and Mexico City were the ones that presented the highest number of HCC cases. At the time of diagnosis, the largest group of patients (41.4%) were in a Child Pugh B clinical stage and a MELD score <1.5 points (62.9%). At the time of diagnosis, most patients (40.5%) were found in stage D according to the BCLC classification. With regard to the treatment of HCC, those that showed greater survival were ARF, resection and TACE ($p < 0.05$). Portal vein thrombosis and MELD did not prove to be parameters that determine survival in patients with HCC. Liver transplantation is the only treatment that was not performed during the study period.
The authors declare that the have no conflicts of interest.

60 CARTEL
PREVALENCE OF TUMOR CACHEXIA IN PATIENTS WITH HEPATIC CANCER

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Background. Cachexia is a metabolic syndrome prevalent in cancer patients that are linked to the cancer-host relation, in which a physical wear is presented due to the accelerated loss of muscle mass, the presence of proinflammatory cytokines, and the increase of the acute protein phase synthesis. This leads to a diminished quality of life, reduced response of oncological treatment, scarring healing, dehiscence of anastomosis, alteration in the immune function, and survival reduction. **Objective.** Measure cachexia prevalence in patients with liver, pancreas, and gallbladder cancer. **Material and methods.** Descriptive study that evaluates 41 patients with hepatic tumor that entered to the Instituto Nacional de Cancerología, in Mexico City, recollecting variables such as: sex, age, medical prognosis, size, habitual weight, actual weight, and weight loss percentage, as well as biochemical variables such as C-reactive protein (PCR) using the statistical analysis using SPSS Version 24. **Results.** 7.2% (3) patients didn't present cachexia, 44% (18) showed signs of early cachexia, 26.8%(11) cachexia, and 22% (9) refractory cachexia (Table 1). Regarding PCR and the % of weight loss, 22% (9) of patients have a loss < 15%, while 78% (32) show a loss > 15%. **Conclusion.** Cachexia syndrome has a great impact over the morbidity and mortality of the oncological patient. This study shows that more than half of the pool of patients has some degree of tumor cachexia. Heightened values of PCR (> 1 mg/dL) are a reflection of a hypercatabolic state.

61 CARTEL
MALNOURISHMENT PREVALENCE AND INFLAMMATORY RESPONSE IN PATIENTS WITH HEPATIC CANCER

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Background. C-reactive protein (PCR) is called this way due to its capacity to precipitate the polysaccharide C of the *Streptococcus pneumaniae* with the presence of calcium, which is synthesized mainly in the liver, in response to the IL-6 and this synthesis is augmented by the IL-1-9 and it is considered a positive acute phase protein. **Objective.** Measure the malnourishment prevalence with relation to the PCR in patients with hepatic tumors (liver, ampulla of Vater and gallbladder). **Material and methods.** Descriptive study that evaluates 41 patients with hepatic tumors that entered to the Digestive Tumors Department of the Instituto Nacional de Cancerología in Mexico City. Using variables such as actual weight, habitual weight, body mass index (IMC) and PCR. In order to value the nutritional status, the variables of the subjective global assessment generated by the patient

(VGS-GP) was used; classifying the nutritional status as, good nutrition, moderate malnourishment, and severe malnourishment using the analytical program SPSS version 24. **Results.** 73% (30) of the patients show values of PCR < 1 mg/dL and an average weight loss of 10 ± 7% in relation of habitual weight. From the results obtained with the VSG-GP, those patients with PCR values ≥ 1 mg/dL showed some type of malnourishment 94% (28) of the patients and 64% (7) in patients with values < 1 mg/dL attaining an average IMC with an overweight diagnosis (26 ± 4 kg/m^2). **Conclusions.** In hepatic tumors, PCR levels prevail above 1 mg/dL in the majority of patients. This is due to the liver, given that it is the main organ that causes the inflammatory reactions in which PCR is liberated by the cascade of inflammatory responses, given that this is a positive acute phase protein it relates to some phase of malnourishment obtained through the VSG-GP as a predictive indicator.

62 CARTEL
MALNUTRITION PREVALENCE IN PATIENTS WITH HEPATIC TUMOR BY MEANS OF ANTHROPOMETRIC INDICATOR AND BIOCHEMICAL AND NUTRITIONAL VALUATIONS

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Background. Malnutrition and weight loss is a frequent problem with patients that have hepatic tumors. Metabolic alterations induced by the tumor generate a systemic inflammatory response, which is shown by a rise of reactive C protein among other cytokines that are involved in protein catabolism and muscle depletion. **Objective.** Measure malnutrition prevalence in patients with hepatic tumor by means of anthropometric indicator and biochemical and nutritional valuations. **Material and methods.** Descriptive study that evaluates 88 patients with a hepatic tumor conducted at the Instituto Nacional de Cancerología in Mexico City. Using variables such as actual and habitual weight, IMC, arm width, arm muscle area (AMA), tricipital skin fold (TSF), RCP, total lymphocyte count (TLC), variables of the subjective global assessment generated by the patient (VGS-GP) using the analytical program SPSS version 2.4. **Results.** Percentage of people evaluated; 45% male and 55% female, ages 61 ± 12, normal weight 71.5 ± 13.5 kg, normal IMC 29 ± 4.6, actual weight 62.4 ± 13.7 kg, IMC 25 ± 4.3, size 1.55 ± 0.8. A 46.5% showed a muscle mass reserve below average, 43% showed a low protein reserve as measured by the AMB, and a 55% showed a very low caloric reserve (TSF). A 48.8% showed a weight loss > 10% severe malnourishment. A 75% with malnutrition by TLC of which 36.9% with severe malnutrition. 72% showed RCP > 1 mg/dL, 54% had anorexia, 59% early satiety, and 87.5% had malnutrition by means of VGS-GP. **Conclusions.** Nutritional valuation is a clinical exercise that gathers anthropometric, biochemical, and dietetic indicators, which as a whole allow a correct nutritional diagnosis. This study reported malnutrition prevalence by use of these indicators. The findings show that more than half of the people evaluated showed malnutrition at the moment of the medical diagnosis.

108 CARTEL
UTILITY OF MANGNETIC RESONANCE WITH GADOXETIC ACID (AGXe) IN HEPATOCARCINOMA: PILOT STUDY IN PUEBLA, MEXICO

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Introduction and aims. Magnetic resonance imaging (MRI) plays an important role in the detection and characterization of focal and diffuse lesions of the liver. Hepato-specific contrast media improves the detection of liver tumors; type hepatocarcinoma depending on pharmacokinetics show vascular, extra and intracellular changes as well as diffusion in different compartments of the liver. The AGDxe has been constituted as a tumor marker of images. To determine the usefulness of the AGXe in MRI for assessment of single or multiple hepatic lesions to evaluate the characteristics, hypervascularity, washing with pseudocapsule formation and hypointense behavior in the hepatocyte phase in lesions > 2 cm. **Material and methods.** In a prospective form from July 2014 to February 2017, we analyzed 70 patients studied in our Institution, evaluating single and multiple hepatic lesions with AGXe in dynamic sequences for assessment of patients with and without liver disease. A total of 38 men and 32 women with an average age of 56.5 years for men and 59 years for women. We evaluated tumor characteristics of hepatocellular carcinoma, such as hypervascular behavior in the arterial phase, pseudocapsule formation in the venous phase and hypointense behavior in the late phase (hepatocyte phase) due to the absence of membrane transporters in the hepatocyte. In addition to these characteristic lesions, we found other lesions smaller than 2 cm and in addition to intrahepatic cholangiocarcinoma, regeneration nodes and metastatic lesions that did not share the aforementioned characteristics. **Results.** 70 patients with suspected hepatic lesions, 54% of them with evidence of pathology showed typical characteristics to consider hepatocarcinoma. 28% showed characteristics compatible with intrahepatic cholangiocarcinoma, 6% metastatic disease and 12% various lesions. **Conclusions.** This is the first report in Mexico with

Table 1 (IX.60). Cachexia prevalece in hepatic tumors.

		Without cachexia	Pre Cachexia Weight loss < 10% in 6 months + clinical changes	Cachexia Weight loss ≥ 10% in 6 months + clinical changes	Refractary Cachexia Weight loss ≥ 15% + PCR ≥ 1 mg/dL
Hepatic	Cancer (41)	7.2% (3)	44% (18)	26.8% (11)	22% (9)

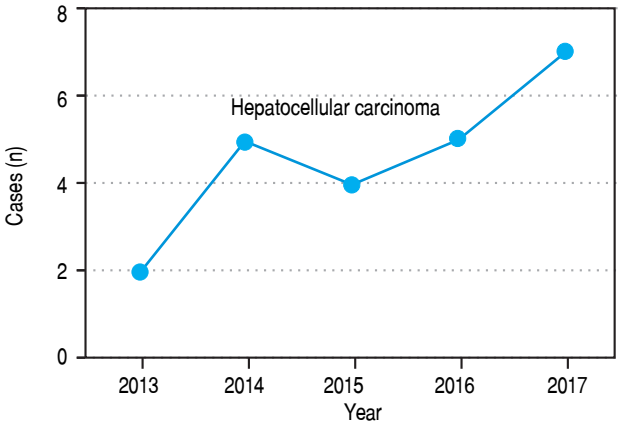

Figure 1 (IX.116). Cases per year.

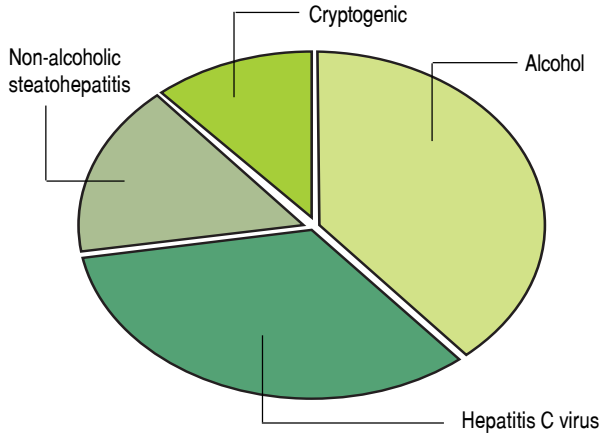

Figure 2 (IX.116). Etiology.

the use of dynamic sequences in MRI with AGDXe in the assessment of hepatic lesions that improves the identification and typical radiological characteristics of hepatocarcinoma, as well as new lesions in comparison with conventional sequences and extracellular contrast medium.

116 CARTEL EPIDEMIOLOGICAL CHARACTERISTICS OF HEPATOCELLULAR CARCINOMA IN HOSPITAL JUÁREZ DE MÉXICO

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Introduction. Hepatocellular carcinoma is one of the most common primary cancers of the liver, representing 85% of these. It is the fifth most common cancer in the world and the third leading cause of cancer death. The highest incidence rates for hepatocellular carcinoma occur in endemic areas for hepatitis B and C viruses, alcohol and non-alcoholic liver disease, more common in men than women, with the most affected being over 55 years of age. Cause of 250 thousand to 1 million deaths per year, 82% of these occur in Asia and Africa. With little information from Latin American countries. In Mexico, an increase in the incidence of this neoplasm has been observed in recent decades, with an increase in mortality from 0.4% to 1.3%. **Objective.** To describe the epidemiological characteristics of hepatocellular carcinoma in the Hospital Juárez de México. **Material and methods.** Retrospective, cross-sectional and observational study. We reviewed the files of patients diagnosed with hepatocellular carcinoma at the Hospital Juárez de México treated during the period from January 2013 to December 2017. The following variables were analyzed: gender, age, risk factors, presence of cirrhosis, associated comorbidity, treatment and mortality. The analysis was performed by descriptive statistics by the SPSS v22 program. **Results.** A total of 23 cases of hepatocellular carcinoma were studied, 11 (47.8%) of the female gender and 12 (52.1%) male, with an average age of 68.3 ± 12.41 years. With an important increase in 2017, since 30.4% of the total cases were found (Figure 1). 78.2% were related to the presence of cirrhosis, of which 38.8% were due to alcohol abuse, 33.3% HCV, 16.6% non-alcoholic liver disease and 11.1% no etiology was identified (Figure 2). At the time of diagnosis 14 (60.8%) required palliative management, with a mortality of 73.9%, without predisposition for gender. **Conclusions.** The results of our study show similarities in the frequency of hepatocellular carcinoma in relation to previous studies, according to age ranges and their relationship with liver cirrhosis. We found the consumption of alcohol as the main risk factor.
The authors deny any conflict of interest.