**Abstract Section**

X Annual Meeting of the Mexican Association of Hepatology


**001**

**PARTICIPATION OF THE ANTIOXIDANT BARRIER IN CELL TRANSFORMATION PROCESS OF THE LINE LIVER WRL-68**

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**Introduction.** Liver cancer is one of the leading causes of death worldwide, representing a global health problem. For its varied etiology (exposure to biological agents, biochemical and xenobiotics), although not fully understood mechanisms and molecular pathways involved in the process of liver carcinogenesis. However, it has been suggested to oxidative stress (EOS) as a possible starter of this process. Clinical reports relate the presence of damage to bio-molecules (DNA, lipids, proteins) and EOS in different liver diseases such as cancer; this as a result of the increased concentration of reactive oxygen species (ROS) and the reduction of antioxidants (AOX). **Objective.** To assess the participation of the antioxidant barrier in the process of cellular transformation in a model of human hepatic origin untransformed (WRL-68); whereas inhibition of the antioxidant glutathione (GSH), catalase (CAT) and chronic exposure to environmental carcinogens mixture (As-Pb-Cd). **Material and methods.** WRL-68 cells were cultured and evaluated four study groups (untreated control, mixture of metals, antioxidant inhibitors mixture and metals mixture + antioxidant inhibitors). The treatments were renewed every 72 h, crops and cellpassaging made every 5 days during 25 days of exposure. With the harvested cells was evaluated the intracellular concentration of ROS (oxidation of Rhodamine-123); lipoperoxidation (T-BARS); genotoxicity (comet assay); AOX activity and concentration (spectrophotometry); cellular transformation (morphology and anchorage-free culture); protein expression (immunohistochemistry). **Results.** A significant increase in the concentration of reactive oxygen species, cytotoxicity, genotoxicity, lipoperoxidation, gene and morphological changes associated with cell transformation was observed; treated with exclusive blend of metals more antioxidant inhibitors group. **Conclusion.** Our results demonstrate the direct involvement of antioxidant barrier inhibiting the transformation of the WRL-68 line; by preventing ROS formation and establishment of EOS. The authors declare no conflict of interest.

**002**

**IL-17 A AND F ISOFORMS AND THEIR RECEPTORS IN EXPERIMENTAL CHOLESTASIS AND THE IL17A/F HETERODIMER INDUCES A PROFIBROGENIC PROFILE IN HEPATIC STELLATE CELLS IN VITRO**

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**Background.** IL-17 plays a central role in the pathogenesis of fibrosis associated with various etiologies. Significant decrease in liver fibrosis in IL-17RA knockout mice has been demonstrated. However, the expression of IL-17 isoforms and their receptors in cholestatic liver fibrosis has not been explored yet. Additionally, there is not enough information about IL-17A/F heterodimer in vitro signaling on hepatic stellate cells (HSC). **Objectives.** To analyze the expression of IL-17A, IL-17F and their receptors IL-17RA and IL-17RC in the liver of rats with cholestasis; additionally we investigated the participation of IL-17A/F on HSC signaling. **Material and methods.** Male Wistar rats were sacrificed at 8 and 30d after bile duct ligation (BDL). Hepatic IL-17A, IL-17-F, IL-17RA and IL-17RC expression was determined by qRT-PCR. Protein levels of IL-17 and RORgammaT were analyzed by Western Blot. Activated HSC were stimulated with IL-17A/F, then the transcriptional factors Stat-3, NF-kB and Smad-2 and profibrogenic genes collagen I, III and TGF-beta were evaluated by qRT-PCR. **Results.** Hepatic gene expression of IL-17A, IL-17-F and IL-17C dramatically increased at 8 and 30d post BDL. IL-17RA significantly increased at 30d post BDL. The overall IL-17RC level was positively correlated with both IL-17A and IL-17F. At the protein level, IL-17 and RORgammaT significantly increased 8 and 30d post BDL. In vitro, Stat-3, NF-kB, Smad-2 and collagen I, III and TGF-beta significantly increased in HSC stimulated with IL-17A/F. **Conclusions.** IL-17 (A and F) isoforms and their receptors are critical mediators of liver damage in experimental cholestatic fibrosis. Th17 cells might represent an important source of IL-17. Heterodimeric IL-17A/F potentially induces profibrogenic genes in HSC cultures.

The authors declares that there is no conflict of interest.

**003**

**EVALUATION OF THE HEPATOPROTECTIVE ACTIVITY OF Silymarin, Silibinin and Sililos in MODELS IN VITRO AND IN VIVO OF LIVER DAMAGE INDUCED BY CCL4 AND ACETAMINOPHEN**

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Background. The extracts of medicinal plants, are assessed increasingly models hepatoprotection. Select the appropriate model and the experimental conditions for assessing the biological activity of natural products is a guideline to follow. Aim. To evaluate the hepatoprotective activity of Silymarin, Silibinin and Sililos in vitro and in vivo in induced liver damage by carbon tetrachloride (CCl4) or acetaminophen (APAP).

Material and methods. Hepatotoxicity of CCl4 and APAP at different concentrations and times in HepG2 was evaluated. Viability by MTT, AST, ALT, LDH and mediators of oxidative stress (total antioxidants, TBARS, SOD and GSH), to select the best model of hepatotoxicity was determined. Cytotoxic activity of Silymarin, Silibinin and Sililos at 10, 100 and 150 μg/mL for 12 h through the afore mentioned parameters were evaluated. The hepatoprotective activity of these agents was assessed in the damage induced by the best hepatotoxic agent in HepG2 and Wistar rats, which were pre-treated orally every 12 h for 3 days before intoxication (intraperitoneal injection) and 24 h after sacrificed. At least 3 replicates were performed.

Results. Regarding hepatotoxicity, the CCl4 was better than APAP. Silymarin, Silibinin and Sililos showed no cytotoxicity at the doses tested and the best of these compounds hepatoprotective activity in HepG2 cells and Wistar rats was shown by silybinin followed by silymarin. Conclusions. 1. The best hepatotoxic agent for bioassay-guided fractionation bioassays during CCl4 conditions was evaluated. 2. The hepatoprotective agents were not toxic, based on the evaluated parameters. 3. Pre-treatment of HepG2 cells with 150 μg/mL and Silibinin pretreatment Silibinin Wistar rats at 70 mg/kg reduced the damage induced by CCl4 indicative of its hepatoprotective activity.

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005 SPIRONOLACTONE EFFECT ON SECONDARY DAMAGE BY HEPATIC ISCHEMIA/REPERFUSION IN WISTAR RATS

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Background. Ischemia-reperfusion (IR) involves the formation of reactive oxygen species and an excessive inflammatory response. Recent studies have shown that spironolactone (SPI) reduces the damage induced by IR in brain, heart and kidney, but has not been reported its effect on the liver. Objectives. To evaluate the effect of SPI during injury induced by IR in rat liver.

Material and methods. The study was performed with 15 male Wistar rats (200-250g) and divided into 3 groups (n = 5). After anesthesia with Pentobarbital (60 mg/kg): in SHAM group was operated without ischemia, the group with IR was underwent to 20 min of hepatic ischemia (occlusion hepatic artery, portal vein and bile duct) followed by 60 min of reperfusion, and ESP group received 2.6 mg/kg orally 20 h before IR and the same process of IR group was performed. For this Project were measured the degree of hepatic lesion morphology and serum concentrations of ALT, AST, LDH, TNFα, IL-6, IL-1α, total antioxidant, lipid peroxidation (TBARS) and catalase activity. The data were analyzed in a statistical software program SPSS 15.0 using ANOVA test with Tukey contrast. Results. After the IR liver tissue damage was evident, characterized by widespread acute inflammatory infiltrate, and disorganization of hepatic hemmorhage trabeculae, and presence of apoptotic bodies. Likewise, serum levels of liver enzymes, cytokines IL-6, TNF-α, levels of MDA and catalase were increased in IR group compared with Sham group, but only showed significantly increase in AST, ALT, MDA and catalase (P < 0.05). Histologically the group level with pretreatment SPI present cellular architecture preserved, isolated pockets of inflammation and apoptotic bodies isolated. The evaluated media tors are shown in the table 1. Conclusions. SPI prevented the liver damage induced by IR, characterized by decrease of histological changes, liver transaminase levels and increase antioxidant enzym catalse.
GDF11 INDUCES AN ANTITUMORIGENIC EFFECT IN HEPG2 CELLS

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Background. Growth differentiation factor 11 (GDF11) is a member of the TGFβ family, which has been characterized as a potent player in development and differentiation. It has been reported that GDF11 content diminish with longevity, the restoration of levels of this protein was associated to muscle tissue repair, at the same time it has been observed that GDF11 can antagonize the effect of canonical growth factors such as EGF and FGF, inducing cell cycle arrest and even apoptosis. Taking in consideration this evidence, the aim of the present work was to address the effect of GDF11 in a well-characterized cancer cell line HepG2, as a first approach of GDF11 in liver cancer. Material and methods. The human hepatoblastoma cell line HepG2 was cultured in standard conditions, cells were treated or not with 100 ng/mL GDF11. Wound healing and Spheroid forming assays were performed. Protein content was measured by Western blotting. Results. Data show that GDF11 induced a decrease in the number and size of the spheroid, in comparison with not treated cells at seven days of treatment, in addition wound healing assays revealed a better repair process in not treated cells, when comparing with GDF11 treated plates at three days of treatment. These data were correlated with a decrease in Akt activation, which lead a signaling pathways associated to proliferation and survival. In conclusion our results suggest that GDF11 could have an antitumorigenic effect in the hepatoblastoma cell line, supporting that GDF11 could be considered as a possible therapeutic target.

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THE PROTECTIVE EFFECT OF THE HGF AGAINST THE TOXICITY INDUCED BY ISONIAZID AND RIFAMPICIN IN A MOUSE MODEL OF PROGRESSIVE TUBERCULOSIS

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Background. Tuberculosis is a disease that is responsible of two million of deceases every year worldwide, this fact is mainly associated to an increase of the number of infections with multidrug resistant strains (MDR), and also to the miscarry on the conventional treatments due to liver failure. It has been proposed the elevation in the doses of drugs, such as rifampicin (RIF) and isoniazid (INH) could be useful for the elimination of the bacteria, but this also could be related to an increase in liver damage. The aim of the present study was to address the effect of the hepatocyte growth factor (HGF) in the liver and lung in the treatment with high doses of RIF and INH in mice infected with a MDR strain of Mycobacterium tuberculosis. Material and methods. In this preclinical assay we used Balb/c, which were infected with a MDR strain of Mycobacterium tuberculosis. Once mice developed the disease we treated them with RIF and INH (150 and 75 mg/kg, i.g. respectively), and cotreated or not with HGF (10 ug/kg). After that, mice were sacrificed at 30 and 60 days post-treatment. We determined colony-forming units, H&E staining, reactive oxygen species (ROS) determination by DHE staining in liver and lungs. Results. Data show that high doses of both drugs increase the production of ROS, steatosis in the liver. The treatment with HGF significantly diminished both conditions. Interestingly, HGF also induced a decrease in the colony-forming units in the lung by increasing ROS, contributing to the lung repair. In conclusion, HGF could be considered as a good adjuvant in the treatment of tuberculosis due to its protective effect in the liver and lungs. Conacyt 131707.

CTGF EXPRESSION DURING LIVER FIBROSIS IN RATS

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Background and aims. Connective Tissue Growth Factor (CCN2/CTGF) is protein involved in wound healing. Increased serum levels of CCN2/CTGF have been related to fibrosis in lung, skin and kidney. In vitro, hepatic stellate cells express this protein under TGF-β1 induction. CCN2/CTGF has been suggested as a fibrosis biomarker in patients infected with hepatitis B virus. However, no evidence of the dynamics of its hepatic expression during liver fibrosis is available. The aim of this study was to assess CCN2/CTGF expression during liver fibrosis in a murine model. Material and methods. Three month male Wistar rats weighing 250 ± 20 g were ad-
administered a different number of CCl4 doses intraperitoneally (250 μl; 33% v/v in olive oil) in order to induce different fibrosis stages: F1 (8 doses), F2 (12 doses), F3 (20 doses) and F4 (40 doses) according to METAVIR score. A control group was included (F0) as well as a group that received 20 doses followed by a moth of recovery (F3-R). Livers were collected and fibrosis was established by histology (H&E, Sirius red). CCN2/CTGF expression was assessed by RT-PCR using specific primers and normalized with 18S. Results were analyzed by One-way ANOVA followed by Tukey test or Student’s t-test when appropriate. Mean ± SD. P < 0.05 was considered significant. Results. Liver expression of CCN2/CTGF was significantly increased in all fibrosis groups compared to control, however no difference was found among the different stages (F0 = 0.085 ± 0.140; F1 = 0.449 ± 0.095; F2 = 0.598 ± 0.086; F3 = 0.616 ± 0.130; F4 = 0.663 ± 0.149 OD; n = 6). During fibrosis reversion, CCN2/CTGF expression was lower compared to the F3 group that had received the same number of CCl4 doses (F3 = 0.616 ± 0.130; F3-R = 0.010 ± 0.001 OD; n = 6). Conclusions. CCN2/CTGF is overexpressed in liver fibrosis induced by CCl4 independently of the degree of damage present in the tissue. This gene is down regulated during fibrosis reversion.

009 IGFBP-1, -3 AND -6 PROTEIN EXPRESSION IN LIVER FROM RATS WITH DIFFERENT FIBROSIS STAGES

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Background and aims. Insulin like growth factor binding proteins (IGFBPs) have been implied in processes like cellular proliferation, apoptosis and extracellular matrix production. Recently, the role of some IGFBPs in fibrogenesis in lung and skin has been established, however few data exist on liver resection. These proteins might have a role in hepatic fibrogenesis. For this reason, we aimed to assess IGFBP-2 and -5 in liver rats with different degrees of fibrosis induced by CCl4. Material and methods. Three months old male Wistar rats weighing 250 ± 20 g were organized in groups of 10 animals, and administered with 8, 12, 20 and 40 intraperitoneal doses of CCl4 (250 μl; 33% V/V in olive oil) to induce different degrees of liver fibrosis. A control group (C) without fibrosis was included. Liver samples were obtained from each group; tissue proteins were extracted by freezing-thawing cycles and quantified by suspension array technology. Histological evaluation of liver was performed by Masson’s trichrome stain and graded according to METAVIR score. Data was presented as mean ± SEM and analyzed by one-way ANOVA followed by Tukey test. p < 0.05 was considered significant. Results. Liver fibrosis increased according to the number of CCl4 doses administered. IGFBP-5 was decreased in the group of 40 doses (cirrhosis) compared to the groups C, 8D, 12D and 20D (C = 89.23 ± 14.45; 8D = 146.39 ± 32.96; 12D = 119.36 ± 29.93; 20D = 89.41 ± 17.86; 40D = 45.15 ± 6.00 ng protein/100 mg tissue). While IGFBP-2 was significantly different in the group 40D compared to 8D (C = 0.26 ± 0.02; 8D = 0.42 ± 0.10; 12D = 0.23 ± 0.04; 20D = 0.22 ± 0.04; 40D = 0.16 ± 0.04 ng protein/100 mg tissue). Conclusions. These results show that IGFBP-2 and IGFBP-5 present similar patterns in synthesis during liver fibrosis induced by CCl4, both proteins are significantly decreased in cirrhosis. Further studies are needed to establish their role in hepatic fibrogenesis. Acknowledgement: This study was funded by “Estímulo Antonio Ariza Cañadailla para la Investigación en Hepatología”, Fundación Mexicana para la Salud Hepática and Consejo Nacional de Ciencia y Tecnología CB-2013-01-221137 (Mexico).
Cd exposure, which could lead to NAFLD progression.

**Introduction.** Non-alcoholic liver disease (NAFLD) is a highly common disease that can progress to steatohepatitis, fibrosis and cirrhosis. Oxidative stress plays an important role in hepatic damage progression. Cadmium (Cd) is a pro-oxidative metal that we could be exposed to through smoke, some food products and contaminated water, mainly.

**Aim.** To evaluate the effect in the liver of Cd subchronic exposure in a hypercholesterolemic murine model.

**Material and methods.** C57bl/6 male mice were fed with a hypercholesterolemic diet (HC; 2% cholesterol and 0.5% sodium cholate) and were exposed to CdCl$_2$ 15 ppm through drinking water for 30 days. Mice were sacrificed and blood serum was isolated for AST determination. Hepatic tissue was analyzed by using optic and electronic transmission microscopy. Antioxidant enzymes like superoxide dismutase 1 (SOD-1), gamma glutamylcysteine synthetase (γ-GCS), glutathione peroxidases 1 and 2 (GPx’s 1/2) and glutathione S-transferase (GST), as well as autophagy-related proteins like AMP kinase (AMPK), dynamin-related protein 1 (Drp-1), optic atrophy protein 1 (OPA1) and mitochondrial Fission proteins 1 and 2 (Mfn 1/2) were evaluated by Western blot.

**Results.** IGFBP7 protein levels significantly decreased in F4 compared to F0, F$_2$ and F$_3$ (F0 = 0.21 ± 0.07; F$_1$ = 0.23 ± 0.09; F$_2$ = 0.17±0.08; F$_3$ = 0.10 ± 0.06; F$_4$ = 0.07 ± 0.04 OD). No significant changes were observed in p53 expression at different stages of fibrosis. **Conclusions.** These results show a significant decrease in IGFBP7 protein levels in the cirrhotic liver induced by CCl$_4$, which could favor activated HSC survival consequently perpetuating fibrogenesis without a role for p53.

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**013**

**EFFECT OF A NATURAL ANTIOXIDANT COMPOUND ON HCV EXPRESSION AND REPLICATION**

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**Background.** Gallic acid (GA), a natural phenol obtained from plants and fruits, which has antioxidant properties could be used as an adjuvant therapy in treatment of viral infections, heart diseases and cancer. Hepatitis C virus (HCV) is a public health problem. Current HCV treatments are expensive, have side effects and are unavailable for many patients.

**Aim.** We investigated the effects generated by different doses of GA in HCV-replication using the subgenomic replicon cell system (Huh7-HCV-replicon) that expresses HCV-nonstructural proteins.

**Material and methods.** Cells were exposed to 100, 200, 300 μM GA at different times (0-72 h), then we evaluated GA cytotoxicity in Huh7 replicon cells by MTT assay. In addition, total RNA and proteins were extracted from treated and untreated cells (control). Expression levels of HCV-nonstructural proteins NS3 and NS5A proteins were evaluated by Western blot analysis and real time RT-PCR. Experiments were performed in triplici- cate and analyzed using a Tukey test (P < 0.05). **Results.** We observed that GA treatment did not produce toxicity in Huh7 replicon cells. The expression levels of NS3 and NS5A proteins were down-regulated by 200 μM GA, compared with the control without GA (40 and 50%, respectively). Furthermore, GA modulates virus replication (HCV-RNA) negatively, decreasing it 40% at 24-48 h at the concentrations of 100, 200 and 300 μM GA. **Conclusions.** These results suggest that GA treatment reduces in vitro HCV protein expression and HCV-RNA replication, causing a transcriptional and translational effect by modulating expression of proteins involved in viral...
cycle, as NS3 and NS5A nonstructural proteins, without affecting cell viability. For this reason GA could be consider a potential natural adjuvant in the treatment of chronic HCV infection.

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014
HEPATIC CHOLESTEROL OVERLOAD PROMOTES AN AGGRESSIVE HEPATOCARCINOMA PHENOTYPE IN A N-DIETHYLNITROSAMINE-INDUCED CARCINOGENIC MODEL

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Introduction. Liver cancer is one of the major causes of mortality worldwide. There are several risk factors for the development of this pathology, such as, hepatitis virus B, C, aflotoxin infection and/or insulin resistance and other diet-induced metabolic disorders. Nowadays, there is a vast amount of information that suggests that a high cholesterol intake promotes the pathogenesis and development of hepatic cancer but the mechanism remains to be elucidated. The aim of this work was to identify the role of a hypercholesterolemic diet (HC) in the liver microenvironment homeostasis as a precondition for hepatic cancer development. A single dose of N-diethylnitosamine (10 µg/g, ip) was administrated or not in C57BL/6 mice 14 days old followed or not by HC (2% cholesterol, 0.5% sodium cholate, 16 days old) feeding for different times (0, 2, 5, 7, 14 days and 8 months) mice were weight and sacrificed; serum was collect-
ed in situ, and total cholesterol and triglycerides were determined by HPLC. Data showed that the diet promotes cholesterol accumulation in both, serum and the liver tissue (7 days). Moreover, an increase in lipid, protein and DNA oxidation was shown (7 days after DEN administration) and it was potentiated with the HC feeding; these results correspond with the ROS production. Furthermore, the antioxidant enzymes expression increased significantly on the DEN/HC groups. Finally the content of DNA damage repair proteins were diminish significant in both experimental groups suggesting that the diet alone could impair the DNA repair by negatively control the proteins related to DNA damage repair and promoting mutation accumulation that leads to cancer. Importantly, mice treated with DEN/HC for 8 months showed more and bigger tumors that also were more vascularized suggesting a more aggressive phenotype when cholesterol is administrated.

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Background. Bacterial translocation (BT) in patients with hepatic cirrhosis is an important trigger of bacterial peritonitis and sepsis, with a mortality rate of 30-50%. BT has been demonstrated in experimental models of hepatic fibrosis. In the model of bile duct ligation (BDL), the BT can be present within the first 24 h following the liver damage. However, it has not been well described the dynamic of cytokines type T_{H1}/T_{H17}, which is currently considered as an emerging field of study. Similarly, there is little information about molecules involved in the integrity of intestinal epithelium as occludin in this experimental model. Objective. To assess the expression of cytokines and transcription factors related to T_{H1}/T_{H17} response, occludin and bacterial load in the bowel of rats with cholestatic liver injury by BDL. Material and methods. Male Wistar rats were sacrificed at 8 and 30 days after BDL. T-bet, IFN-γ, RORγ and IL-17 were measured by Western blotting in total protein extracts of intestine. Bacterial load was assessed through detection of E. coli by qPCR. Occludin expression was analyzed by immunohistochemistry. Results. Expression of T-bet, IFN-γ, RORγ and IL-17 were increased during early fibrosis (8 days) in the small and large intestine, compared with control group. In advanced fibrosis (30 days), the T_{H1}/T_{H17} response was very similar to early fibrosis in small and large intestine, with the exception of T-bet, which was down-regulated in small bowel. Immunostaining of occludin decreased drastically at 8 and 30 days of BDL. Bacterial overload of E. coli was detected at 8 and 30 days after BDL. Conclusions. Bacterial overgrowth associated to bacterial translocation is intimately linked to overexpression of IFN-γ and IL-17. These cytokines might contribute synergistically to exacerbate the inflammatory process, as well as to weaken important transmembrane proteins of tight junctions, such as occludin, which in turn would facilitate the intestinal permeability. The authors declare that there is no conflict of interest. This work has no subsidy.
this cohort with a high percentage of cirrhotic patients treated in Latin America, similar to that reported in RCTs.

### 002 OXIDATIVE STRESS EVALUATION IN LIVER DAMAGE INDUCED BY HCV

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**Background.** In patients chronically infected, the virus replication is continuous and can develop a variety of liver diseases such as fibrosis, cirrhosis and hepatocellular carcinoma in a period of 5 to 30 years. Researchers reported that in chronic hepatitis, immunity initiates the production of ROS and nitric oxide. Furthermore, it is known that HCV produces more ROS than other viruses. **Aim.** Evaluate the oxidative stress through the quantification of carbonyl groups in patients with hepatitis C. **Material and methods.** Patients with positive HCV viral panel of Hospital General de Mexico were recruited (n = 19). Also a group of 130 subjects without clinical or biochemical stigmata of liver disease with negative HVC viral panel constituted the control group. Four Whole blood samples were obtained of each patient in the course of a year. Content of carbonyl groups were quantified in the serum of patients and controls by a spectrophotometric technique. **Results.** Values represented as the mean ± SE. **Conclusions.** Our results showed that levels of cytokines in patients with chronic HCV are augmented.

### 003 EVALUATION OF PRO-INFLAMMATORY CYTOKINES IN CHRONIC HEPATITIS C PATIENTS

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**Background.** Chronic hepatitis C virus (HCV) infection represents an important global health problem, affecting 130-150 million people in the world. Cytokines play an important role in viral clearance, infection control, inflammation, regeneration and fibrosis. However, these molecules are also implicated in both viral persistence and the liver damage seen during chronic HCV infection. **Aim.** Evaluate levels of cytokines in patients with chronic HCV. **Material and methods.** Study two subject groups of Liver Clinic and Blood Bank of Hospital General de Mexico. Group 1 positive HCV patients and group 2: subjects without clinical or biochemical stigmata of liver damage with negative HVC viral panel. Serum cytokine levels were determined by Lumien technology. For statistical analysis was performed U-Mann Whitney and were considered significant differences when P < 0.05. **Results.** Included 80 subjects: 60 controls and 29 patients with HCV infection. The mean age was 39 ± 9.4 and 55 ± 11 years, respectively (P < 0.001). **Conclusions.** Our results showed that levels of cytokines in serum in chronic hepatitis C patients are augmented; this response demonstrated that inflammation is an important mechanism in this pathology. We propose to study the levels of these molecules considering different stages of liver cirrhosis induced by HCV.

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### 004 USE OF RAPID SCREENING ASSAYS TO DETECT HCV CARRIERS IN A SOCIAL SECURITY FAMILY MEDICINE CLINIC IN MEXICO

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**Background and aims.** Hepatitis C virus (HCV) represents a global epidemic. In Mexico HCV prevalence is 1.4%. 50 to 70% of HCV carriers do not know they are sick, and that they have a high probability of evolving to chronic liver disease.
and cirrhosis. Rapid antibody tests for HCV represent an important support for the detection of infected patients due to their high sensitivity and specificity. The aim of this study was to evaluate de factibility of using rapid screening assays as a way to detect HCV carriers in waiting rooms of family medicine clinics. **Material and methods.** Descriptive, observational, prospective study carried in people between 18 and 75 years old, affiliated to social security system in Mexico, in the family medicine clinic #57, and having risk factors for HCV. The following risk factors were considered: blood transfusion before 1995, surgery before 1995, use of intravenous drugs, potentially contaminated needle exposure, first degree relative with hepatitis C or cirrhosis, high risk sexual activity and health worker. Candidates were surveyed with a questionnaire for risk factors. If they had risk factors, blood was obtained by digit puncture in order to perform a quick assay for hepatitis C OraQuick (OraSure Technologies, Inc). If HCV contaminated needle (41%), high risk sexual practice (31%), family history (20%), blood transfusion (14.8%), health worker. Candidates were surveyed with a questionnaire for risk factors. If they had risk factors, blood was obtained by digit puncture in order to perform a quick assay for hepatitis C OraQuick (OraSure Technologies, Inc). If HCV was detected, diagnosis was confirmed with third generation ELISA and patient was referred to the gastroenterology department for treatment. **Results.** 1,030 tests were performed (737 female and 293 males). Most of the patients aged between 40 and 60 years old. The most frequent risk factor identified was surgery before 1995 (56%), followed by use of potentially contaminated needle (41%), high risk sexual practice (31%), family history (20%), blood transfusion (14.8%), health worker (12%) and use of intravenous drugs (0.4%). Six patients having positive quick assays were identified, one of which was a false positive. **Conclusions.** Quick assays for HCV are useful and easy to screen population in a social security clinic. No conflict of interest exist for any of the authors. OraQuick assays were provided by ROCHE.

**005 DISTRIBUTION OF SNP RS 738409 OF PNPLA3 GENE AND ITS ASSOCIATION WITH METABOLIC SYNDROME IN MEXICAN POPULATION WITH CHRONIC HCV**

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**Introduction.** Non-alcoholic hepatic steatosis in patients with chronic hepatitis C virus (HCV) accelerates the progression of hepatic fibrosis, reduce the viral response rate (VRR) and increase the incidence of hepatocellular carcinoma. Polymorphism on the patatin-like phospholipase-3 (PNPLA3) gene increases risk of steatosis and fibrosis progression in HCV infected patients. The PNPLA3 single nucleotide polymorphism (SNP) rs738409 play as a genetic predictor for at-risk alleles and fibrosis. This gene is located on the long arm of chromosome 22 at band 13.31 (22q13.31). It encodes a membrane protein with enzymatic activity and participates in the energy balance of adipocytes. **Objective.** To describe the SNP rs738409 in PNPLA3 gene distribution in Mexican patients with chronic HCV, its response to treatment and association to metabolic syndrome. **Material and methods.** The blood of 85 subjects treated (ribavirin/pegylated interferon alfa-2α) for chronic HCV was analyzed. Clinical and biochemical data for metabolic syndrome were retrospectively collected. The polymorphism SNP Rs738409 in PNPLA3 gene was determined according to the following sequence GGAGATAAGGGCCACTGTAGAAGGG[C/G]ATGGGAAGCG AGGACATCAGGCG in genomic DNA obtained from peripheral blood mononuclear cells. Real-time PCR and PCR-dissociation curves (PCR-TR Light-Cycler v2) were used. **Results.** The prevalence of metabolic syndrome was 18% (n = 16). The most common cardiovascular risk factors in our population were hyperalphalipoproteinemia, hypercholesterolemia, overweight and obesity [n = 55, 42, 31, 19 (64.7%, 49.4%, 36.4%, 22.35% respectively)]. Carbohydrate metabolism alterations with prevalence of 37.6% (n = 32). The prevalence of genotype (GG) associated with the development of hepatic steatosis was 4.4% (n = 4). The GG and GC genotypes had better response kinetics at treatment week 12. The CC genotype carriers maintained a higher viral load. In overall, presence of this polymorphism did not modify the VRR. **Conclusions.** Hyperalphalipoproteinemia and weight problems were the most common risk factors. The data obtained suggest that SNP Rs738409 GG in PNPLA3 gene is rare and doesn’t seem to alter the VRR. The SNP rs738409 must be assessed in open population to determine the true prevalence and impact in our population. The high prevalence of metabolic disorders could negatively impact the VRR in our population.

The author declares that there is no conflict of interest.

**006 FACTORS ASSOCIATED WITH RESPONSE TO TREATMENT WITH PEGIFN AND RIBAVIRIN IN PATIENTS WITH HCV IN THE NORTHEAST OF MEXICO**

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**Introduction.** HCV prevalence in the north of Mexico is 2%, treatment with Peginterferon and Ribavirin (PR) was the standard until 2011. Direct acting antivirals have improved sustained virological response (SVR) mainly in genotype 1 (GT1), but the availability in Mexico is very limited. **Objective.** Analyze factors associated with SVR or treatment failure (TF) with PR therapy in patients with chronic hepatitis C. **Materials and methods.** 71 patients treated with PR; GT1 n = 53, GTno-1 n = 18. Registered data: RNA-VHC, AST, ALT, BIL, ALB, ALP, GGT, GLU, Cr, INR, HB, PLT, WBC, NEU; with follow-up at weeks 4, 12, 24, 48 y 72 of treatment; and significant differences between SVR and TF groups. **Results.** Age (53 ± 12), female gender [40(56%)] and BMI (26.9 ± 4.8) were comparable between groups (p > 0.05). Diabetes mellitus type 2 [6(8.4%)] , cardiovascular disease [4(5.6%)], alcohol consumption [11(15.5%)] and use of IV drugs [8 (13.3%)] were not significant between groups (p > 0.05), nor in previous treatments: SVR 6% vs. TF 11%
Material and methods.

Background. Between 130-210 million individuals worldwide have chronic hepatitis C virus (HCVC); in Mexico the prevalence is estimated between 0.7 and 1.4 % for the general population. The SVR rate in this group of patients globally does not exceed 40% with treatment discontinuation in 26% of adverse effects. The initiation of therapy, particularly in patients with liver cirrhosis, altered levels of AST, ALB, ALP, and GGT were associated with TF. Patients with higher WBC and NEW showed SVR. Comorbidities and previous treatments did not influence treatment response.

Conclusions. There was a higher SVR in GT no-1 and a higher number of patients with null response in GT1 vs. GT no-1. Patients with GT1, cirrhosis, altered levels of AST, ALB, ALP, and GGT were associated with TF. Patients with higher WBC and NEW showed SVR. Comorbidities and previous treatments did not influence treatment response.

007 EFFICACY AND SAFETY OF Pegylated INTERFERON Monotherapy in the Treatment of Chronic HCV in patients with Chronic Kidney Disease

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Introduction. In Mexico, the prevalent genotype in HCV infected individuals is type 1. Unfortunately, treatments based on interferon haven’t had a satisfactory response in individuals infected with this genotype. The development and marketing of direct-acting antivirals has allowed a dramatic increase in sustained viral response (SVR) in these patients, thus preventing progression to complications such as cirrhosis and hepatocellular carcinoma. Objective. To describe 6 cases of HCV genotype 1 infection treated with triple therapy with boceprevir.

Material and methods. A retrospective study including all patients with HCVC, CKD in HD HCVC of the Specialty Hospital National Medical Center XXI Century; secondary objectives were to assess demographic characteristics of patients and their clinical and biochemical evolution and safety during antiviral therapy.

Table 1 (008).

<table>
<thead>
<tr>
<th>Age</th>
<th>Sex</th>
<th>Genotype</th>
<th>IL-28b</th>
<th>Baseline (U/mL)</th>
<th>VL VL12 (U/mL)</th>
<th>End of treatment</th>
<th>SVR</th>
<th>Status</th>
<th>Fibrosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>F</td>
<td>1b</td>
<td>NA</td>
<td>2,460,000</td>
<td>43,000</td>
<td>Undetected</td>
<td>Present</td>
<td>Virgin</td>
<td>NA</td>
</tr>
<tr>
<td>40</td>
<td>M</td>
<td>1a</td>
<td>NA</td>
<td>14,384</td>
<td>Undetected</td>
<td>Undetected</td>
<td>Present</td>
<td>Virgin</td>
<td>NA</td>
</tr>
<tr>
<td>34</td>
<td>F</td>
<td>1a</td>
<td>ND</td>
<td>602,000</td>
<td>12</td>
<td>Undetected</td>
<td>Present</td>
<td>Nonresponder</td>
<td>NA</td>
</tr>
<tr>
<td>58</td>
<td>F</td>
<td>1a</td>
<td>CT</td>
<td>2,784,860</td>
<td>599,665</td>
<td>Undetected</td>
<td>Undetected</td>
<td>Present</td>
<td>Virgin</td>
</tr>
<tr>
<td>50</td>
<td>M</td>
<td>1b</td>
<td>TT</td>
<td>1,001,000</td>
<td>Undetected</td>
<td>Undetected</td>
<td>Present</td>
<td>Nonresponder</td>
<td>F4</td>
</tr>
</tbody>
</table>

Conclusions. There was a higher SVR in GT no-1 and a higher number of patients with null response in GT1 vs. GT no-1. Patients with GT1, cirrhosis, altered levels of AST, ALB, ALP, and GGT were associated with TF. Patients with higher WBC and NEW showed SVR. Comorbidities and previous treatments did not influence treatment response.

008 TRIPLE THERAPY WITH Peginterferon Alfa 2a, Ribavirin, and Boceprevir in Patients with Chronic HCV ISSEMYM Medical Center Experience

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Introduction. In Mexico, the prevalent genotype in HCV infected individuals is type 1. Unfortunately, treatments based on interferon haven’t had a satisfactory response in individuals infected with this genotype. The development and marketing of direct-acting antivirals has allowed a dramatic increase in sustained viral response (SVR) in these patients, thus preventing progression to complications such as cirrhosis and hepatocellular carcinoma. Objective. To describe 6 cases of HCV genotype 1 infection treated with triple therapy with boceprevir.

Material and methods. Patients with HCV genotype 1 infection who finished treatment with triple therapy with boceprevir included. Demographic, history or absence of pretreatment viral behavior were documented during treatment and results of determinations of IL28B when available. Results. We included 6 patients whose mean age was 51 years. 5/6 cases had high viral load (VL) (> 600,000 IU/mL) at the start of treatment. Average VL: 1,153,351 IU/mL. In the 8th week of treatment the VL was undetectable in 50% and in 100% at the end of treatment. Adverse effects during treatment included: cytopenias, fatigue, dizziness, weight loss, decreased appetite; drug dose adjustment was required in all patients. One case had a history of orthotopic liver transplantation requiring immunosuppressive therapy that required dose adjustment. Conclusions. Treatment with triple therapy achieved a SVR in 5/6 cases. Adverse effects occurred in 6/6 cases but were tolerable without the necessity to stop treatment. Drug interactions must be taken into account prior to the initiation of therapy, particularly in patients with liver transplantation.
Currently, 170 million people worldwide are chronically infected with hepatitis C virus (HCV). In Mexico, the reported prevalence is 1.4%. Groups at high risk of exposure to the virus may benefit from early detection, however remains controversial whether screening should be done in the rest of the population without risk factors. Aims. To determine the demographics of HCV infection through rapid tests (RT) in an open population, including the risk factors associated with the infection. Material and methods. A cross-sectional observational study was conducted using RT anti-HCV to test voluntary study was conducted using RT anti-HCV to test voluntary patients and people that request to be proof. The age range was 16 to 91 years, median 29 years, 80 were born between 1945 and 1964. Twenty one positive results were obtained, equivalent to 4% of the total population, 11 (52%) were born between 1945 and 1964. Two (9.5%) patients with positive results had no risk factors for HCV acquisition. In the rest intravenous drug use (14%) and blood-transfusion (76%) were found. Conclusions. In this study, we found a three times higher frequency of HCV compare to the reported in our country. It is also interesting that 9.5% of those infected had no risk factors identified. We consider important to extend this kind of studies to determine which patients should be screening in our country.

Background and aim. Obesity is a major cause of nonalcoholic liver disease (NAFLD). A phenotype of obese patients without metabolic syndrome comorbidities has been described, this patients are called metabolically healthy obese (MHO). The prevalence of liver fibrosis in MHO patients is unknown. The aim of this study was to determine the prevalence of liver fibrosis in MHO patients. Material and methods. A cross-sectional study nested in a clinical trial (NCT01874249) which evaluated 1,024 patients with NAFLD. The presence of liver fibrosis was assessed by NAFLD Score, APRI and Fibroscan® (150 patients). The MHO patient classification was performed using Wildman (W), Wildman Modified (WM), and metabolic syndrome consensus (MSC) criteria. Data were analyzed by Fisher exact test. Results. 428 obese patients were included, 84.6% were female, mean body mass index was 33.4 ± 3.2 kg/m². The prevalence of MHO patients for each criteria was W: 5.4%, WM 16.4% and MSC: 25.7%. Metabolically unhealthy obese patients classified by W criteria had a higher prevalence of liver fibrosis compared with MHO (42 vs. 21.4%), while MSC criteria, MHO patients had a higher prevalence of advanced fibrosis compared with metabolically unhealthy patients (12.2 vs. 21.8%) (p < 0.05) (Figure 1). Conclusions. According to classification criteria, MHO patients have less prevalence of hepatic fibrosis than metabolically unhealthy patients.

Background. Noninvasive models have been developed and approved for the prediction of hepatic fibrosis in patients with nonalcoholic liver disease (NAFLD). The aim of this study is to determine which of these models show a greater value for the prediction of early fibrosis stages using different histopathological classifications. Material and methods. The study included 39 hepatic biopsies with confirmed diagnosis of nonalcoholic steatohepatitis (NASH). Fibrosis stage was deter-
determined by an expert pathologist using the nonalcoholic liver disease activity score (NAS) and the Brunt classification. Early fibrosis was defined as fibrosis stage ≤ 2 in both classifications. The evaluated noninvasive models were APRI/platelet index and FIB-4 index. Results. NAS reported 36 (92.3%) cases of early fibrosis (Ia, Ib, Ic, II) while the Brunt classification reported 35 (89.7%) cases in early stages I and II. APRI values showed a mean of 0.823 with a maximum of 2.61 and a minimum of 0.21. FIB-4 levels reported a mean of 1.79 with a maximum of 5.32 and a minimum of 0.52. Chi-square (χ²) showed a mean of 0.823 with a maximum of 2.61 and a minimum of 0.52. The noninvasive model APRI for the association of NAS with the stated fibrosis by NAS was 0.387 (p = 0.009) and by Brunt was 0.415 (p = 0.45). The χ² for the association of FIB-4 and fibrosis stated by NAS was 0.396 (p = 0.74) and FIB-4 with fibrosis by Brunt was 0.610 (p = 0.223). Conclusion. The noninvasive model APRI has a significant association with early fibrosis stages using NAS and Brunt classification. On the other hand, FIB-4 shows a poor performance when associated with the reported fibrosis by both histopathological classifications.

**003**

**BILE ACIDS METABOLISM AND GUT MICROBIOTA IN PATIENTS WITH NON ALCOHOLIC FATTY LIVER DISEASE**

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3. Research Laboratory, Fundación Clínica Médica Sur, Mexico City, Mexico.
4. Obesity and Digestive Diseases Unit, Medicasur Clinic and Foundation, Mexico City, Mexico.

Background. Non-alcoholic fatty liver disease (NAFLD) is the most common cause of chronic liver disease. It has been suggested that bile acids (BA) modulate several metabolic pathways that regulate glucose, lipid, and energy homeostasis and in the other hand we know that microbiota can induce alterations in BA metabolism. Objective. The aim of this study was to investigate if there are differences in bile acids and microbiota composition between NAFLD patients and healthy controls. Material and methods. We studied 40 NAFLD patients diagnosed by ultrasound and 40 healthy controls, of both gender (24 women and 56 men) and age between 20 to 75 years old. Clinical, anthropometric and biochemical data were collected. Total and fractionated BA were determined by mass spectrometry and proteins expression quantified by ELISA assay and microbiota was determined by pyrosequencing. We also evaluated cytokeratin-18, 7α-hydroxylase and 27α-hydroxylase. Results. Media ± SD value of biochemical and anthropometric data in control and NAFLD group were as follows: BMI (25.47 ± 2.97 vs. 27.76 ± 4.88), glucose (91.17 ± 6.21 vs. 101.35 ± 21.27), ALT (23.8 ± 9.3 vs. 33 ± 18.17), AST (25.5 ± 5.2 vs. 29.12 ± 10.78), triglycerides (161.89 ± 100.4 vs. 210.42 ± 144.55), HOMA-IR (1.16 ± 0.56 vs. 1.84 ± 1.21); all this were significant (p ≤ 0.05). Cholesterol (212.8 ± 43.0 vs. 204.77 ± 41.49) and LDL (131.6 ± 36.6 vs. 119.42 ± 38.69) were not different. Bile acids, protein expression and microbiota quantification in NAFLD patients and healthy controls are showed in table 1. Conclusion. We did not find significant differences in bile acids composition and microbiota between NAFLD patients and healthy controls. Cytokeratin-18 and enzymes involved in bile acid synthesis were different between groups.

**004**

**EVALUATION OF THE ANTIOXIDANT BARRIER AND OXIDATIVE STRESS MARKERS IN PATIENTS WITH NONALCOHOLIC HEPATIC STEATOSIS**

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Background. Nonalcoholic fatty liver disease (NAFLD) is a global health problem that affects 35% of the Western population. Begins with the accumulation of fatty acids or steatosis (E), progressing to inflammation, fibrosis and hepatocellular carcinoma. Reactive oxygen species (ROS), oxidative stress (OXS) and changes in antioxidant barrier have been proposed as potential mechanisms involved in NAFLD, suggesting their study in early and progression stages. Aim. Determine the involvement of oxidative stress and antioxidant barrier changes in patients with hepatic steatosis. Material and methods. Anthropometric and biochemical data, as well as serum samples, from 20 healthy volunteers as a control group (Ctl) and 20 patients with E (diagnosed by ultrasound) were collected from the CIDyT-Medica Sur Clinic and Foundation, Mexico.

**Table 1 (003).** Quantification of bile acids, protein expression and microbiota.

<table>
<thead>
<tr>
<th></th>
<th>Healthy control n = 40</th>
<th>NAFLD n = 40</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bile acids (μmol/L)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cholic acid</td>
<td>1.7 ± 0.9</td>
<td>1.7 ± 0.5</td>
<td>0.80</td>
</tr>
<tr>
<td>Chenodeoxycholic acid</td>
<td>1.9 ± 1.2</td>
<td>2.1 ± 0.9</td>
<td>0.32</td>
</tr>
<tr>
<td>Deoxycholic acid</td>
<td>1.5 ± 0.2</td>
<td>1.5 ± 0.1</td>
<td>0.87</td>
</tr>
<tr>
<td>Total bile acids</td>
<td>4.9 ± 1.4</td>
<td>5.3 ± 1.3</td>
<td>0.27</td>
</tr>
<tr>
<td><strong>Protein expression</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cytokeratin 18 (CK-18) (U/L)</td>
<td>337 ± 0.01</td>
<td>393 ± 0.01</td>
<td>0.0001</td>
</tr>
<tr>
<td>7α-hydroxylase (pg/mL)</td>
<td>442 ± 0.2</td>
<td>369 ± 0.2</td>
<td>0.0001</td>
</tr>
<tr>
<td>27α-hydroxylase (ng/mL)</td>
<td>0.15 ± 0.04</td>
<td>0.27 ± 0.08</td>
<td>0.0001</td>
</tr>
<tr>
<td><strong>Microbiota (relative abundance)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bifidobacterium</td>
<td>0.09 ± 0.03</td>
<td>0.06 ± 0.01</td>
<td>0.385</td>
</tr>
<tr>
<td>Akkermansia</td>
<td>0.13 ± 0.07</td>
<td>0.10 ± 0.03</td>
<td>0.624</td>
</tr>
<tr>
<td>Bacteroidetes</td>
<td>11.1 ± 0.65</td>
<td>11.5 ± 0.61</td>
<td>0.675</td>
</tr>
</tbody>
</table>

T: Student's t test
D.F. Enzymatic activity of superoxide dismutase-1 (SOD-1) and catalase (CAT), as well as ROS (H₂O₂), lipid peroxidation (Lpx) and cell death (CK-18) levels were assessed by spectrophotometric techniques. Data were analyzed with T-Student statistical test. Results. The E group presented higher levels of glucose, triglycerides, liver enzymes, overweight and BMI in comparison with baseline values of Ctrl group. A significant increase (P < 0.05) of H₂O₂ concentration (10%), cell death (15%) and Lpx (20%) were observed in E group vs. Ctrl group. SOD-1 and CAT activity remained unchanged for both groups. Conclusion. The presence of ROS and OXS markers in early stages of NAFLD identified the involvement of these mechanisms in the development and progression of the disease.

The authors declare no conflict of interest.

005 RELATION BETWEEN IGFBP-3 AND BMI ON BLOOD DONORS

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Background. Overweight and obesity are a growing epidemic that is associated with insulin resistance, increased risk of NAFLD, being a common condition that affects 25% of people in the world. IGF-1 is produced by hepatocytes and is modulated by binding proteins insulin-like growth factor type (IGFBPs), mainly by the IGFBP-3, which is an anti-inflammatory molecule. Objective. To evaluate the levels of IGFBP-3 according to body mass index (BMI); normal weight, overweight and obese subjects. Material and methods. Blood donors of General Hospital of Mexico, who signed informed consent, were included. The IGFBP-3 levels were quantified in serum by Luminex (Biorad) technology and orthogonal ANOVA analysis was used to determine differences between groups. Conclusions. The IGFBP-3 in previous studies is considered a potential biomarker of non-alcoholic fatty liver disease. Our results demonstrate that a higher BMI, the concentration of IGFBP-3 is greater. Levels of this protein may be involved in the development of NAFLD. This project was supported by PROMEP-SEP.

Table 1 (005).

<table>
<thead>
<tr>
<th>(n)</th>
<th>Normal (21)</th>
<th>Overweight (44)</th>
<th>Obesity G1 (23)</th>
<th>Obesity G2 (6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex, M/F</td>
<td>17/4</td>
<td>44/0</td>
<td>20/3</td>
<td>3/3</td>
</tr>
<tr>
<td>IGFBP3</td>
<td>705 ± 157</td>
<td>835 ± 382</td>
<td>912 ± 353</td>
<td>1383 ± 523</td>
</tr>
</tbody>
</table>

We found significant differences between Normal and Obesity Grade I (p = 0.052), Normal and Obesity Grade II (p = 0.004) group and differences between Normal and Obesity Grade I found II (p = 0.004).

006 INSULIN RESISTANCE AND METABOLIC SYNDROME IN PATIENTS WITH ADVANCED FIBROSIS WITH NON ALCOHOLIC STEATOHEPATITIS ACCORDING TO NAFLD SCORE AND FIB 4

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Background. Non-Alcoholic Fatty Liver Disease (NAFLD) is an entity difficult to diagnose so clinical scales have been developed to determine the probability of advanced fibrosis (F3-F4) with a PPV 90%, such as NAFLD score (AUROC 0.88), FIB-4 (AUROC 0.80). Insulin resistance as part of the pathophysiology for the development of steatosis and fibrogenesis, and the hallmark of the metabolic syndrome, which can identify patients at risk of liver disease and insulin resistance (HOMA-IR > 2.0). Objective. Identify patients with advanced fibrosis by applying scales NAFLD score, FIB-4 in patients diagnosed with Fatty Liver by ultrasound, and the presence of insulin resistance and metabolic syndrome. Material and methods. NAFLD score scales and FIB-4 were applied in patients into gastroenterology department at Hospital Juarez of Mexico from January 2014 to January 2015, in which secondary hepatic steatosis was discarded and values corresponding to advanced fibrosis (FIB 4 > 2.67, NAFLD score > 0.675). HOMA index and measuring waist circumference, HDL, triglycerides, impaired glucose metabolism, hypertension for diagnosis of metabolic syndrome was determined. Results. 60 patients with hepatic steatosis, of which 65% were women and 35% men, mean age 47 and 46.9 years respectively, were resistant to insulin 88.3% and 53.3% metabolic syndrome, obesity or overweight in 95% (55 and 40% respectively), the presence of steatohepatitis according to FIB 4 in 13.3% NAFLD score in 15%, and of these with HOMA > 2 in 87.5 and 77.8% and metabolic syndrome in 37.5 and 55.6% respectively. Conclusions. In patients with NAFLD are currently clinical tools that guide us to the presence of advanced fibrosis, so that failure to comply with 3 criteria for diagnosis of metabolic syndrome does not exclude the presence of insulin resistance, therefore FIB-4 and NAFLD score and HOMA IR scores, must be applied in patients with hepatic steatosis and overweight or obese.
ALCOHOL CONSUMPTION AND CARDIOVASCULAR RISK IN PATIENTS WITH FATTY LIVER DISEASE

Material and methods. Patients that assisted to a diagnosis and treatment center with body mass index (BMI) > 25 kg/m² were evaluated between October 2010 to December 2012. FLD was diagnosed by hepatic ultrasound. An alcohol consumption questionnaire was applied to classify patients according to the total grams of alcohol consumed: < 140 g/week (overweight FLD) and > 140 g/week (mixed FLD). Framingham score was used to evaluate cardiovascular risk using demographic, clinical and biochemical variables. Data were analyzed by student t Test and Fisher exact test. Results. 278 patients were included with a mean age of 45.1 ± 8.5 in the overweight FLD group and 45.3 ± 7.7 in the mixed FLD group. Both groups showed a male predominance. In the mixed FLD the mean grams of alcohol consumed were 290.4 ± 174.35 g/week. Factors associated to chronic hepatic damage were higher in the mixed FLD group (Table 1). Framingham score was significantly higher in the patients from the mixed FLD group (8.4 ± 6.7 vs. 11.2 ± 9.0, p = 0.01) with an increased probability of a higher ten-year cardiovascular risk compared to overweight FLD patients (OR 2.63; 95%CI 1.14-6.06, p = 0.02). Conclusions. Alcohol consumption > 140 g/week increases significantly the cardiovascular risk in patients with FLD and BMI > 25 kg/m².

008
ACUTE KIDNEY INJURY AS A PREDICTOR OF MORTALITY IN PATIENTS WITH SEVERE ALCOHOLIC HEPATITIS

Background. Alcoholic hepatitis is a major cause of death and the third cause in Mexico. Recent studies show that acute renal failure is a major risk factor contributing independently of patient mortality. The AKIN classification (Acute Kidney Injury Network) is based on the appearance of new epidemiological data showing an increase of 80% in mortality risk with minimal changes in serum creatinine of 0.3 to 0.5 mg/dL. Aim. Identify acute kidney injury as predictor of mortality in patients with severe alcoholic hepatitis. Material and methods. Patients admitted to the Gastroenterology Department between January 2013 and January 2015 with diagnosis of severe alcoholic hepatitis, which was established by clinical and laboratory criteria, which in previous series have already proved their reliability without liver biopsy. Type of study: retrospective, cross-sectional. Variables analyzed: gender, age, baseline serum creatinine, serum creatinine at 48 h of hospitalization, overall mortality at 30 and 90 days and by type of renal injury. Statistical analysis: the results were analyzed with descriptive measures of central tendency for obtaining the mean, median, percentages. Results: In the 2-year period 98 patients with this diagnosis, of whom 59 had acute kidney injury were entered. The 27.11% of these patients developed AKIN type 1, type 2 42.37% and 30.50% type 3. The mortality rate at 30 days was 77.96% and 91.51% at 90 days, type 3 showed the worst prognosis with 100% mortality at 30 days. Conclusions: Our study showed that renal impairment is a critical event in the survival of patients with alcoholic hepatitis. The AKIN classification is useful for predicting short-term mortality. Strategies to prevent acute kidney injury should be considered in the initial treatment of patients with severe alcoholic hepatitis.
patients was 44 years, with a range of 11-82 years. There were 17 men and 34 women, where 43.2% were advanced stage of fibrosis and 56.8% for mild fibrosis stage. RDW values reported (11.8-20.8) with an average of 13.99. In Pearson correlation analysis there was significant correlations between RDW and fibrotic stage. This reached statistically significance such that Pearson’s correlation coefficients were $r = 0.305$ and $p = 0.029$. **Conclusions.** The relationship between RDW and the advanced fibrotic stage was determined by correlation with $r = 0.305$ and $p = 0.029$, thus having this ratio is directly proportional to increased levels of RDW with fibrotic stage with statistical significance for the sample size. It means that in care centers in our country could be a useful tool in preventing application on NAFLD. The authors declares that there is no conflict of interest.

**CLINICAL RESEARCH–LIVER CIRRHOSIS**

**001**

**CYANOACRYLATE FOR ESOPHAGEAL AND GASTRIC VARICES IN PATIENTS WITH CIRRHOSIS. SYSTEMATIC REVIEW AND META-ANALYSIS**

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**Background and aims.** Cyanoacrylate has been studied for the management of the spectrum of gastro esophageal varices. However, its efficacy and rate of adverse events are important concerns. The aim of this study was to compare the benefits and harms of cyanoacrylate in the treatment of gastro esophageal varices. **Material and methods.** The research was conducted at The Cochrane Central Register of Controlled Trials (CENTRAL) and on MEDLINE up to 2014. Randomized clinical trials comparing the use of cyanoacrylate versus other methods for acute bleeding, primary and secondary prophylaxis in cirrhotic patients were included. Data were analyzed using odds ratios (ORs) and 95% confidence intervals.

**Results.** Twelve randomized clinical trials were included. For acute bleeding, cyanoacrylate achieved better rates of hemostasis (RR 1.09; IC95% 1.01-1.19), with less mortality (OR, 0.63; 95% CI, 0.43-0.91), bleeding-related mortality (OR, 0.41; 95% CI, 0.22-0.74), and rebleeding (OR 0.52; IC95% 0.38-0.71) compared with other endoscopic methods for any type of varices. For gastric varices, cyanoacrylate yielded less rebleeding (RR 0.53; IC 95% 0.34-0.78) than band ligation. For esophageal varices, cyanoacrylate produced less mortality (OR, 0.53; 95% CI, 0.29-0.97) and rebleeding (OR, 0.46; 95% CI, 0.24-0.88) than sclerotherapy. For secondary prophylaxis, cyanoacrylate showed more adverse events than other methods. For primary prophylaxis, cyanoacrylate showed less acute variceal bleeding episodes (10 vs. 38%) and less bleeding-related mortality (0 vs. 10%). **Conclusion.** For acute variceal bleeding, cyanoacrylate reduced rebleeding episodes, and exhibited a high hemostasis rate. Additional trials are necessary to support these data.

**002**

**ANTIBIOTICS FOR SPONTANEOUS BACTERIAL PERITONITIS IN CIRRHOTIC PATIENTS; SYSTEMATIC REVIEW AND META-ANALYSIS**

**SÁNCHEZ-JIMÉNEZ B, MÉNDEZ-SÁNCHEZ N, URIBE M, CHAVEZ-TAPIA NC**

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**Background and aim.** Spontaneous bacterial peritonitis (SBP), a complication in cirrhotic patients occurs in the absence of any intra-abdominal source of infection. Antibiotic therapy should be initiated to avoid severe complications and death. Third generation cephalosporins are the current standard treatment. The aim of this study is to compare the difference mortality, no resolution of SBP, and side effects on different groups of antibiotics. **Material and methods.** Electronic search was performed in The Cochrane Hepato-Biliary Group Controlled Trials Register, the Cochrane Central Register of Controlled Trials (CENTRAL) in The Cochrane Library, MEDLINE, EMBASE, and Science Citation Index EXPAND-ED until December 2014. References of all identified studies were hand searched. Randomized studies comparing different types of antibiotics for SBP in cirrhotic patients were inclu-

![Figure 1 (002). Mortality: third generation Cephalosporin vs. any other ATB (quinolone, aminoglycoside, penicillin or carba-penem).](image-url)
Background and aim. The presence of ascites indicates decompensation in cirrhotic patients, increasing mortality. Inhibitors of the selective vasopressin type-2 receptors (ARV2) represent an option for ascites refractory to standard treatment. The aim of this study is to assess the benefits and harms of ARV2 in this scenario. Material and methods. Electronic search was performed on the Cochrane Central Register of Controlled Trials, The Cochrane Library, MEDLINE, EMBASE, Science Citation Index EXPANDED and Cochrane Hepato-Biliary Group Controlled Trials Register until April 2014. Trials comparing ARV2 against placebo to manage ascites in cirrhotic patients were included. Two authors independently extracted data, and assessed risk. Results. Eleven randomized clinical trials including 1,940 patients were included. The primary outcomes were all-cause and disease-specific mortality, liver transplantation and adverse events. Meta-analyses showed no significant difference in effect between an ARV2 and placebo on all-cause mortality 22 vs. 16% (OR 1.27, 95% CI 0.99 to 1.62, I² = 12%); disease-specific mortality 17 vs. 12% (OR 1.27, 95% CI 0.94 to 1.70, I² = 0%); liver transplantation 5.2 vs. 5.5% (OR 0.93, 95% CI 0.56 to 1.52, I² = 0%); total adverse events 83 vs. 80% (OR 1.19, 95% CI 0.92 to 1.53, I² = 36%). However, ARV2 significantly decreased body weight (MD -1.53 kg, 95% CI -1.99 to -1.07, I² = 0%) and significantly increase serum sodium (MD 2.52 mmol/L, 95% CI 1.94 to 3.11, I² = 64%). Conclusions. This meta-analyses showed no benefit of ARV2 in mortality or liver transplantation, and even though ARV2 improve ascites and serum sodium, this may not be clinical important.

<table>
<thead>
<tr>
<th>Study of subgroup</th>
<th>Experimental Events</th>
<th>Experimental Total</th>
<th>Control Events</th>
<th>Control Total</th>
<th>Weight</th>
<th>Risk ratio M-H, fixed, 95% CI</th>
<th>Risk ratio M-H, fixed, 95% CI</th>
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<tr>
<td>Cárdenas 2012</td>
<td>5</td>
<td>63</td>
<td>4</td>
<td>57</td>
<td>2.6%</td>
<td>1.13 (0.32, 4.01)</td>
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<tr>
<td>Gerbes 2003</td>
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<td>18</td>
<td>0</td>
<td>20</td>
<td></td>
<td>Not estimable</td>
<td></td>
</tr>
<tr>
<td>Gines 2008 suppl.</td>
<td>34</td>
<td>92</td>
<td>22</td>
<td>47</td>
<td>17.9%</td>
<td>0.79 (0.53, 1.18)</td>
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<tr>
<td>Gines 2008</td>
<td>0</td>
<td>28</td>
<td>0</td>
<td>28</td>
<td></td>
<td>Not estimable</td>
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<tr>
<td>Gines 2010</td>
<td>0</td>
<td>38</td>
<td>1</td>
<td>35</td>
<td>1.0%</td>
<td>0.31 (0.01, 7.31)</td>
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<tr>
<td>Nevens 2009 suppl.</td>
<td>0</td>
<td>10</td>
<td>0</td>
<td>5</td>
<td></td>
<td>Not estimable</td>
<td></td>
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<tr>
<td>Okita 2014</td>
<td>0</td>
<td>25</td>
<td>0</td>
<td>26</td>
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<td>Sakaida 2014</td>
<td>0</td>
<td>82</td>
<td>0</td>
<td>80</td>
<td></td>
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<tr>
<td>Thuluvath 2006</td>
<td>0</td>
<td>6</td>
<td>0</td>
<td>6</td>
<td></td>
<td>Not estimable</td>
<td></td>
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<tr>
<td>Wong 2010</td>
<td>4</td>
<td>40</td>
<td>3</td>
<td>36</td>
<td>1.9%</td>
<td>1.20 (0.29, 5.00)</td>
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<td>Wong 2012</td>
<td>203</td>
<td>720</td>
<td>104</td>
<td>478</td>
<td>75.7%</td>
<td>1.30 (1.05, 1.59)</td>
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<tr>
<td>Total (95% CI)</td>
<td></td>
<td>1,122</td>
<td>818</td>
<td></td>
<td>100.0%</td>
<td>1.19 (0.99, 1.43)</td>
<td></td>
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<tr>
<td>Total events</td>
<td>246</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

Heterogeneity: 007 2 = 5.30, df = 4 (P = 0.26); I² = 25% Test for overall effect: 1.18 (P = 0.06)
(182.3 ± 80.4 vs. 121.4 ± 75.3 p = 0.003). None of the patients received anticoagulant treatment. There was no difference between upper gastrointestinal bleeding (UGB) and spontaneous bacterial peritonitis (SBP) in the groups. Encephalopathy (grade 3-4) requiring hospital treatment (46.7 vs. 30.7% p = 0.007) and large volume ascites (57 vs. 38.4% p = 0.012) was more common in Non-PVT. Survival was better for PVT (16.5 ± 27.9 vs. 4.13 ± 12.2 months p = 0.005). The only predictor of mortality after multivariate analysis was the MELD score (HR 1,155, CI-95%, 1,098-1,215, p = < 0.001). Conclusion. This is the first study reporting the prevalence of PVT in Mexico. We found that PVT itself does not lead to a worse prognosis. The most reliable predictor for clinical outcome remains the MELD score. The presence of PVT could be just an epiphenomenon and not a marker of advanced liver disease.

005 MANAGEMENT OF HEPATIC CIRRHOSIS SECONDARY TO STEATOHEPATITIS WITH VITAMIN E-PENTOXIFYLLINE-METFORMIN PILOT STUDY

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Background. Steatohepatitis is a public health problem in Mexico and the world, and it is an etiological factor increasingly frequent of liver cirrhosis. It is estimated that by 2025 could be the leading cause of cirrhosis in Western countries and the world. Objective. Assess whether the use of pentoxifyllinemetformin-vitamin E is an alternative to treat these patients versus change of lifestyle and Sitaglaptin. Material and methods. This pilot clinical trial was realized in the gastroenterology service of Valentin Gómez Farias Hospital in Zapopan, Jalisco over a period of six months. Twenty-nine patients participated and they were divided into two groups. The experimental group with a total of 14 patients received 800 mg pentoxifylline orally, every 24 h + 5 mg metformin orally, every 24 h + 400 U of vitamin E orally, every 24 h, meanwhile, the control group with 15 patients received lifestyle changes based on 150 min per week of anaerobic exercise + diet of 1,500 kilocalories + Sitaglaptin 500 mg orally, every 24 h. The diagnostic was made based on serological, biochemical, molecular, endoscopic, ecosonography, and body mass index, glucose, cholesterol, and PCR. Biopsy was not realized because the obtained clinical data showed the diagnosis. Results. All patients were in Child A classification; the average age of the experimental group was 62 ± 11, and the control group was 64 ± 10. No significant difference was found in the progression of Child (p > 0.005). The experimental group presented INR 1.0, cholesterol: 159 mg/dL, AST: 26 mg/dL, and ALT: 24 mg/dL, while the control group showed INR 1.10, cholesterol: 188 mg/dL, AST: 34 mg/dL, and ALT: 26 mg/dL. There was no significant difference in adverse effects between both groups. Conclusions. The pilot test showed that the use of pentoxifylline-metformin-vitamin E is equally effective as the use of changing lifestyle and diet for 6 months. Therefore, studies of larger and long term are suggested to know its actual effectiveness. The authors declares that there is no conflict of interest.

007 MAIN CAUSES OF HOSPITAL READMISSIONS AMONG DECOMPENSATED CIRRHOTIC PATIENTS AT HGZ NO. 1 IMSS

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Background. Cirrhotic patients are a vulnerable group to several comorbidities that decompensate their medical condition. There is no substantial evidence in our country to establish the main causes of hospital readmission among decompensated cirrhotic patients. Objective. To establish the main causes of hospital readmission among decompensated cirrhotic patients at our Center and compare them versus the main causes stated in literature. Material and methods.
Observational, cross-sectional, descriptive and retrospective study. Realized at Internal Medicine and Gastroenterology services of HG2MF No. 1 IMSS Pachuca, Hidalgo, Mexico from January 2012 to August 2014. We applied a data collection card to gather patient’s information and to evaluate their causes of hospital readmission within the first month and six months after discharge. We used SPSS for descriptive statistics. **Results.** We studied 77 decompensated cirrhotic patients readmitted at our Center. Of all of patients, 20 of them were Child-Pugh A (25.97%), 33 were Child-Pugh B (42.85%) and 24 were Child-Pugh C (31.16%). The main causes of hospital readmission within the first month after discharge were hepatic encephalopathy (56.25%) and variceal bleeding (43.75%). Hepatic encephalopathy still led hospital readmissions after six months of discharge (42.85%), followed by variceal bleeding (22.07%), infections (11.68%), ascites (11.68%) and jaundice (11.68%). **Conclusions.** Hepatic encephalopathy is the main cause of hospital readmission among decompensated cirrhotic patients at our Center, both within the first month and six months after discharge. Other causes are as followed: variceal bleeding, infections, ascites and jaundice. We suggest to be performed other studies in Centers of our country to validate our findings.

**SARCOPENIA IN PATIENTS WITH LIVER CIRRHOSIS AND PORTAL HYPERTENSION OF THE INSTITUTO NACIONAL DE CIENCIAS MÉDICAS Y NUTRICION SALVADOR ZUBIRÁN**

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**Background.** Loss of skeletal muscle mass (SMM) is an adverse event that affects prognosis, and Quality of Life of Patients with liver cirrhosis (LC). Sarcopenia is the syndrome characterized by gradual and widespread loss of SMM, strength and functional capacity. Series of patients published about this syndrome in LC are still limited in Mexican population. **Objective.** To asses the prevalence of sarcopenia in patients with LC and portal hypertension at the INCMNSZ. **Material and methods.** Cross-sectional study in 105 patients with LC was conducted from February 2012 to November 2013. SMM was estimated by bioelectrical impedance (BIA), bicipital and tricipital skinfold, BMI, and measurement of muscle strength (MS), it was classified as diminished when MS < 30 kg/f in men and < 20 kg/f in women. The SMM was calculated with Rangel, et al. equation for Mexican population (2014), the grade of depletion was classified as severe, moderate and normal. Sarcopenia diagnosis was made considering both MS and SMM according to The European Working Group on Sarcopenia on Characters in the Elderly. **Results.** 60% were women. Main etiologies were HCV, idiopathic LC, alcohol and PBC. Mean age was 57.03 ± 12.82 years old and major comorbidities were: DM2, hypertension, hypothyroidism and obesity. Average BMI was 27.83 ± 5.26 kg/m². Mean percentage of fat mass for men and women was 30.44 ± 6.9% and 69.55% ± 6.1% vs. 62.3 ± 6.9% for fat free mass, respectively. The average MS was 23.71 ± 7.26 kg/f for men and 12.56 ± 5.46 kg/f for women. 40.4% of men and 50% of women presented diminished MS. The depletion in SMM was severe in 62.9% of patients, moderate in 25.7% and normal in 11.4%. Considering both, the SMM and the MS, the prevalence of sarcopenia was 74.6% (50.7% was severe) and 25.4% pre-sarcopenia. **Conclusions.** Sarcopenia in LC is highly prevalent (74.6% in this population) and is often underestimated. It is important to make an early assessment and treatment, due this entity is related with a decrease of the quality of life, comorbidities and complications. The authors declare that there is not conflict of interest.

Table 1 (008).

<table>
<thead>
<tr>
<th>Patient</th>
<th>Age (years)</th>
<th>Sex</th>
<th>Etiology of portal hypertension</th>
<th>Previous esophageal or gastric varices</th>
<th>Re-bleeding before 3 months</th>
<th>Re-bleeding at 6 months</th>
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<tbody>
<tr>
<td>1</td>
<td>46</td>
<td>Female</td>
<td>Portal vein thrombosis</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>2</td>
<td>74</td>
<td>Male</td>
<td>Liver cirrhosis</td>
<td>Yes, esophageal</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>3</td>
<td>53</td>
<td>Male</td>
<td>Liver cirrhosis</td>
<td>Yes, esophageal</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>4</td>
<td>59</td>
<td>Male</td>
<td>Splenic vein thrombosis/pancreatitis</td>
<td>Yes, gastric</td>
<td>Yes</td>
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</table>
010
AUDITORY P3B, P3A, CRITICAL FLICKER FREQUENCY AND PSYCHOMETRIC TESTS TO DETECT MINIMAL ENCEPHALOPATHY

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Introduction. Minimal hepatic encephalopathy (MHE) impairs quality of life, the ability to carry out daily activities and produces an increased risk of traffic accidents. Diagnostic tools for MHE in the clinical routine must be easy to use, with high sensitivity, valid, objective, and reliable. Psychometric and electrophysiological tests are currently used to detect MHE. Critical flicker frequency (CFF) has been used for the diagnosis of MHE but neurophysiological tests provide more objective results. Objective. Compare the psychometric hepatic encephalopathy score (PHES) test, the critical flicker frequency test auditory P3b and P3a event-related potentials to detect minimal encephalopathy. Material and methods. Fifty consecutive patients with liver cirrhosis were recruited at the Liver Clinic of General Hospital of Mexico City. Patients with alcoholic cirrhosis were discarded. All patients completed Psychometric battery PHES, auditory P3b and P3a and, CFF. Stimuli to elicit ERPs were standard 1000Hz, target 2000Hz pure tones and white noise as distractor. Stimuli lasted 100 ms and were presented in semirandom sequences of 400 stimuli 2:8 (target: standard) for P3b and 600 stimulus 1:1:8 (target:distractor:standard) for P3a. Dicotonic values were assigned and submitted to contingent table analysis. Significance was set at alpha below 0.05. Results. Eighteen patients did not met inclusion criteria. Comparisons were performed in the rest of the patients (mean age = 56.84, sd = 9.38, 26 female) Child Pugh A: 21, B: 10, C: 2. Etiology: Cryptogenic: 10, HVC: 9 NASH: 3 HVB: 2, CBP 1. McNe-...
Table 1 (013). Area under the curve for grade 3-4 liver fibrosis in biopsy with and mmHg of hepatic venous pressure gradient.

<table>
<thead>
<tr>
<th>mmHg</th>
<th>AUC</th>
<th>IC-95%</th>
<th>P</th>
<th>Sensibility</th>
<th>Specificity</th>
<th>PPV</th>
<th>NPV</th>
<th>LR +</th>
<th>LR -</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.4</td>
<td>0.910</td>
<td>0.807-1.000</td>
<td>&lt;0.001</td>
<td>95%</td>
<td>75%</td>
<td>92%</td>
<td>81%</td>
<td>3.8</td>
<td>0.06</td>
</tr>
</tbody>
</table>

013 HEPATIC VENOUS PRESSURE GRADIENT AS A PREDICTOR OF ADVANCED LIVER FIBROSIS

Hernández-Velázquez B1, Cortez-Hernández C1, Borjas-Almaguer O2, Alejandre-Loya J1, Bosqués-Padilla F1, Maldonado-Garza H1, García-García J1

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Introduction. Hepatic venous pressure gradient (HVPG) correlates with liver fibrosis of viral etiology and with complications of advanced disease. Liver biopsy is considered the gold standard for diagnosis of liver fibrosis; nevertheless, interobserver variability, sample viability and associated complications limit its use. A non-invasive study such as Fibrotest has been used as predictor of liver fibrosis with inconstant results. Objectives. To evaluate HVPG as a predictor of liver fibrosis. Material and methods. Retrospective study (June 2011-December 2014). Patients with diagnosis of chronic liver disease submitted to hepatic hemodynamic studies with biopsy.

Results. Sixty-four patients were evaluated, 11 were eliminated because inadequate liver tissue sample. A total of 53 subjects, 29 male (54.7%) 24 female (45.3%) with an average age of 54.11 ± 12.3. Child A 24 (45.3%), B 23 (43.4%), C 6 (11.6%). MELD 8 (4-19). Etiology: alcoholic 19 (35.8%), hepatitis C virus 7 (13.2%), autoimmune 11 (20.8%), drug associated 2 (3.8%), primary biliary cirrhosis 1 (1.9%), non-alcoholic fatty liver disease 3 (5.7%), cryptogenic 10 (18.9%). With regard to HVPG, 6 (11.4%) patients had normal HVPG (≤5 mmHg), 3 (5.6%) patients had 5.1-9.9 mmHg, 3 (5.6%) patients had clinically significant portal hypertension and 41 (77.4%) had severe portal hypertension. The Receiver Operating Characteristic (ROC) curve of HVPG for prediction of severe fibrosis (3-4) had an area under the curve (AUC) of 0.91 with a HVPG value of 11.4 mmHg, with a sensitivity of 95% and specificity of 75%. ROC curve of HVPG for severe liver fibrosis for Fibrotest was of 0.727, with a HVPG value of 11.9 mmHg, with a sensitivity of 90% and specificity of 40%. Conclusions. HVPG correlates with degree of liver fibrosis. A HVPG greater than 11.4 mmHg is a predictor of advanced liver fibrosis. This cutoff can be used to predict liver fibrosis grade in patients with inadequate liver biopsy. The author declares that there is no conflict of interest.

014 FIBROSCAN AS PREDICTOR OF DECOMPENSATION IN CIRRHOSIS


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Background. Portal hypertension common complication of cirrhosis, contributes to the development of ascites, esophageal varices (EV) and hepatic encephalopathy (HE). There noninvasive methods for predicting stage of portal hypertension to help identify complications and optimize diagnosis and management of cirrhosis. Elastography may reflect progressive increase in portal pressure. Publications have established cutoff 21kpa as a predictor of significative portal hypertension, predicting decompensation. Objectives. Assess the first event of the usefulness of fibroscan events as predictor of decompensated cirrhosis. Material and methods. Included 54 patients with liver cirrhosis, making elastography. Con track six months. Results included 44 patients. Statistical analysis with SPSS version 19 package, descriptive analysis of quantitative variables. To detect the presence correlation between the value of fibroscan and presence of bleeding events, VE, ascites and encephalopathy employment Pearson correlation test. 43.2% female, 56.8% male principal alcohol etiology (38.6%). 59% larger and 41%. The small varices hemorrhage 36.3%; ascites 52.2% grade 2 and 25% grado1; EH 9%. The Pearson correlation test was not statistically significant for any of the variables measured, though showing a tendency to greater number of kilopascals, manifestations of more severe portal hypertension. Conclusions. The Fibroscan could be a useful noninvasive predictor decompensation, easy to perform test. In our study as it is reported in the literature, we note that values above 21 are associated with portal hypertension and decompensation. However a larger sample and long term is needed to determine its usefulness.

015 PREVALENCE OF INFECTIOUS COMPLICATIONS AMONG HOSPITALIZED DECOMPENSATED CIRRHOTIC PATIENTS VS. COMPENSATED CIRRHOTIC OUTPATIENTS

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Background. Cirrhosis is a cause of immunodeficiency. Hospitalized decompensated cirrhotic patients are at high risk of developing infectious complications due to their immune status, bacterial translocation and hemodynamic alterations. Objective. To establish the prevalence of infectious complications among hospitalized decompensated cirrhotic patients vs. compensated cirrhotic outpatients. Material and methods. Prospective cohort study. Realized at Internal Medicine and Gastroenterology services of Hospital General SSA Pachuca, Hidalgo, Mexico from December 2012 to January 2014. Compensated cirrhotic patients managed as outpatients were included in one cohort; hospitalized decompensated cirrhotic patients were included in another cohort. We applied a data collection card to gather patient’s information, and it was processed using relative risk. Results. We studied 64 patients in each cohort, for a total of 128. 44 of the hospitalized patients (68.75%) developed infectious complications vs. 22 outpatients (34.37%). The relative risk of developing infections in hospitalized decompensated cirrhotic patients was two times higher than a compensated cirrhotic outpatient (RR 2.0) IC 95% (1.37-2.91) p 0.00001. Urinary tract infection was the most common infectious complication, with prevalence of 35.93% in hospitalized patients vs. 18.75% in outpatients. Other causes of infectious complications, in hospitalized and outpatient respectively, were: spontaneous bacterial peritonitis
Conclusions. The relative risk of developing infections in hospitalized decompensated cirrhotic patients is two times higher than a compensated cirrhotic outpatient (RR 2.0); urinary tract infection is the most common cause. We suggest other studies to be performed in order to validate our results.

016

AUDITORY P300 EVENT RELATED POTENTIALS TO DETECT MINIMAL ENCEPHALOPATHY

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Background and aim. Primary liver cancer accounts for 4% of all new cancers diagnosed worldwide. Hepatocellular carcinoma accounts for 90% of all hepatic neoplasms and only 10 to 30% of tumors occur in non-cirrhotic livers. Case report. A 51 years old man, with type A mild hemophilia 48.4%, multiple transfusions of factor VIII, social alcoholism, suspended six months ago, infection with hepatitis C virus genotype 1 a newly diagnosed, a viral load of 2,260.000 IU/mL, negative serologies for hepatitis B. Referred right upper quadrant abdominal pain, decreased appetite, jaundice and weight loss 10 kg 4 months duration. Physical examination: jaundice, hepatomegaly of 5 cm, right upper quadrant pain, no stigmata of chronic liver disease. Laboratory alpha-fetoprotein 712 ng/mL, hemoglobin 10.7 g/dL, platelets 336,000, creatinine 4.78 mg/dL, prothrombin time (PT) 16/11.7 sec, total bilirubin 8.8 mg/dL, directly 7.8 mg/dL, albumin 2.6 g/dL, ALT 162 U/L, AST 523 U/L, liver ultrasound with hyperechoic tumor of 9 per 10 cm in segment VI, peripheral vasculature, during the hepatic arterial phase, angiography demonstrates a tumor of 9 by 10 cm in the right hepatic lobe, hypodense heterogeneous without enhancement to intravenous contrast, with enhancement of the pseudocapsule, but without washing late phase or portal vein thrombosis with pulmonary metastases. It was scheduled for liver biopsy by laparotomy; however, the patient had worsening of renal failure and died. The autopsy revealed multifocal conventional moderately differentiated hepatocellular carcinoma, mass subtype with multiple satellite nodules smaller in the rest of the hepatic parenchyma without fibrosis or cirrhosis and pulmonary metastasis. Conclusions. Search for hepatitis B and C is recommended in patients with hemophilia A. Confirmation is required histopathological hepatic carcinoma in atypical tumors by imaging study in non-cirrhotic livers as in this case which were in stage C of the classification of Barcelona, being a candidate for treatment with Sorafenib according to clinical stage and have no contraindication to their hematologic disease. The authors declare no conflict of interest.

Introduction. Minimal hepatic encephalopathy (MHE) is related to cognitive impairment in several domains affecting abilities to perform daily living activities and decreasing quality of life. Psychometric and perceptual tests are currently used for detecting MHE. Psychometric test over-diagnose MHE while Critical Flicker Frequency (CFF) is a better test but availability is difficult. CFF had proved superior sensitivity and specificity than psychometric test in MHE diagnosis, but new and more available tools are required. Recently electrophysiological test such as P300 event related potentials (ERP) have been proposed as an alternative to assess cognitive impairment in MHE, but literature is poor to this respect and more supporting evidence is required. Objective. To compare the psychometric hepatic encephalopathy score (PHES) test, the critical flicker frequency test auditory P300 event-related potentials to detect minimal encephalopathy. Material and methods. Twenty-five consecutive patients with nonalcoholic liver cirrhosis and 25 controls were recruited at the Liver Clinic of General Hospital of Mexico City. All participants completed Psychometric battery PHES, auditory P300, and CFF in separated sessions. Stimuli to elicit ERPs were standard 1000 Hz, target 2000 Hz pure tones presented in semi-random sequences of 400 stimulus 2:8 (target:standard). Dichotomous values were assigned to detection of MHE and submitting to contingent table analysis while P300 were analyzed with Student test. Significance alpha level was set below or equal to 0.05. Results. McNemar tests showed no significance to PHES (p = 0.28), CFF test were sensitive (p = 0.050), and P300 distinguished between controls and MHE patients (p = 0.50). Conclusions. PHES failed to detect MHE. Distributions between CFF and auditory P300 suggest similar power for detecting MHE. P300 is more available than CFF in current clinical practice and results provide evidence of suitability for assess MHE diagnosis.

Interest conflict: authors declare absence of interest conflict for the present research.
Background. Studies in some populations provide evidence for the genetic variants in genes related to alcohol metabolism, such as alcohol dehydrogenase (ADH1) and cytochrome P450 (CYP2E1) genes related to enzymatic activity. Some studies suggest a protective effect of these genetic variants, but in other cases has been associated with an increased risk of liver disease development. Aim. To describe genetic variation of ADH1 (ADH1B*1/*2, ADH1B*2/*2, ADH1C*1/*1, ADH1C*2/*2) and CYP2E1 (CYP2E1 C1/C1, CYP2E1 C2/C2) genes in Colombian patients diagnosed with cirrhosis and/or hepatocellular carcinoma (CHC) assisted in a hospital of Medellin, Colombia. Material and methods. Patients with cirrhosis and/or CHC who voluntarily agreed were included in the study and were recruited in a Hepatology Unit in Medellin city, Colombia. Blood sample or hepatic tissue was collected and preserved at -70 °C. Liver tissue DNA extraction was performed using the chloroform-trizol method and peripheral blood sample was extracted with a commercial kit method. PCR-RFLP was performed to determine the gene polymorphism of interest. A 107pb region of exon 3 of ADH1B gene was amplified, a 146pb of exon 8 of ADH1C was amplified and a fragment of 413pb of promoter region of CYP2E1 was amplified. The restriction was performed with MaelIII, SspI and RsaI enzyme, respectively. The polymorphism observed in the patient’s samples was compared with genotype reported data from the 1000 genomes (http://www.1000genomes.org/index.html) for ADH1B, ADH1C and CYP2E1. Results. We have identified the genotype of ADH1B*1/*1, ADH1B*2/*2 and heterozygote in 65.5% (19/29), 3.45% (1/29) and 31.03% (9/29) samples, respectively. In ADH1C, the ADH1C*1 genotype and heterozygous (ADH1C*1/*2) was detected in 73.68% (14/19) samples, respectively. And the CYP2E1/C1 genotypes in 88.46% (46/52) and CYP2E1/C2 and ADH1C*1. It should be noted that genotype ADH1C*1 encodes an enzyme with increased metabolic activity, which could represent risk for developing liver disease; however, studies are controversial according to population. This work was supported by Colciencias and the University of Antioquia, Medellin Colombia.
fatigue against the biochemical alterations in liver tests of patients with primary biliary cirrhosis. **Material and methods.** Observational, cross-sectional, descriptive and retrospective study. Realized at Gastroenterology outpatient clinic of HGF-MF No. 1 IMSS Pachuca, Hidalgo, Mexico from January 2008 to December 2013. We applied the Borg Rating of Perceived Exertion Scale and liver tests were performed among patients. We used Excel for descriptive statistical measures and Pearson product-moment correlation coefficient to measure the dependence between the degree of fatigue and biochemical alterations. **Results.** We studied 19 patients with Primary biliary cirrhosis. Ten patients (52.63%) had some degree of fatigue, while 9 (47.36%) were asymptomatic. Of all of patients with fatigue, 8 of them (80%) had mild fatigue and 2 patients (20%) had moderate fatigue. As regard of the values of alkaline phosphatase, 3 (25%) were asymptomatic, and there were no patients with severe fatigue. A determination of 0.601 between the degree of fatigue and alteration of alkaline phosphatase level was obtained, which indicates a positive correlation. **Conclusions.** There appear to be a positive correlation between the degree of fatigue and alkaline phosphatase values in patients with primary biliary cirrhosis. We suggest to be performed other studies in Centers of our country to validate our findings.
AIH. During follow-up 15 patients treated with UDCA showed an improvement in ALT (p = 0.047), whereas patients treated with UDCA + PRED and/or AZA showed an improvement in GGT (p = 0.017). Conclusions. The three international classifications can be complementary for OS diagnosis. RIAHHG diagnosed a larger number of cases. PC diagnosed 33%. The majority of patients showed cirrhosis on admission (53%). Overall long term survival was lower in patients with OS, compared with PBC and AIH, regardless which treatment was used.

005 HERBALIFE AS A PREDISPOSING AUTOIMMUNE HEPATITIS, A CASE REPORT
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Background and aim. Autoimmune hepatitis has a prevalence of 10-17 per 100,000 in Europe, affecting women 3-4 times more often than in men. Most have no identifiable precipitating cause, has been associated with viral infections, drug use and even the subsequent use of herbal drugs. Drugs and herbal products can cause autoimmune hepatitis. Using Herbalife as a medicinal product and weight reduction has been controversial in the past 10 years and has caused liver failure in more than 70 cases. Case report. Female 34 years old with no medical history, which has intermittent jaundice boxes Itching refers Herbalife diet intake, being impaired liver function, study protocol begins with mitochondrial antibodies (-), neutrophil cytoplasmic antibodies (+), anti-LKM (+) ASMA: negative, antinuclear antibody (+), MRI scans are performed finding probable data diffuse hepatocellular inflammatory disease liver disease and/or nonspecific cholangitis. Liver biopsy is done by finding incipient liver cirrhosis with moderate activity, presence of granuloma and eosinophil suggests drug damage, posterior two-year suspension supplements the patient reported onset of fatigue, weakness, headache, jaundice, pruritus generalized predominantly nocturnal, right upper quadrant pain resulting immunological studies are repeated negative, negative viral panel to HBV, HCV, CMV immunoglobulin G but with 4999, ALT and AST increased 5 normal value, autoimmune hepatitis score is calculated at 11, is management starts with prednisone 30 mg dose reduction and azathioprine 50 mg, with partial response to treatment with reduction ALT and AST to normal. Conclusion. The diagnosis of hepatitis caused by drugs and herbal consumption is rare and poorly documented described that some drugs can cause hepatocellular damage that mimics autoimmune hepatitis and this possibility has been suggested for herbal products.

006 CHolangiopathy associated with IgG4, A CASE REPORT
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Introduction. IgG4-related cholangiopathy, a different type of cholangitis of unknown origin, by increased serum levels of IgG4, infiltration of IgG4-positive plasma cells, fibrosis and obliteratorive phlebitis. Storiform fibrosis with thickening of the bile duct wall is characterized. It is associated with autoimmune pancreatitis. Is recognized as a manifestation of biliary IgG4 related diseases. It is diagnosed by a combination of imaging, serology, histopathology and responsiveness to steroids. Its cholangiographic features are difficult to differentiate from primary sclerosing cholangitis, pancreatic cancer or cholangiocarcinoma. Objective. Diagnosis of IgG4-associated cholangitis in patients with chronic pancreatitis of unknown origin. Case report. Male 34 years old, history of nephropathy of unknown origin at birth steroid treated with appropriate response. Starts with jaundice, dark urine, acolia associated with acute HAV hepatitis. Persists hiporexia, jaundice, dark urine, acolia, lost weight 10 kg, generalized pruritus, intermittent abdominal pain in epigastric region, cholestatic pattern, function normal hepatic synthesis, MRI of the abdomen suggests probably autoimmune sclerosing cholangitis, cystic image in pancreas, pancreatic duct is not observed in their proximal course, dilated, tortuous, irregularly contoured distal. Then ERCP and Endoscopic Ultrasound is performed with needle aspiration cytology inconclusive so exploratory laparotomy with biopsy of the head and body of pancreas plus liver biopsy was necessary, then reported Immunohistochemistry positive for IgG4 in plasma cells. Discussion. We must suspect of IgG4-related in patients with one or more characteristic patterns in tissues or in those with pancreatitis of unknown origin, sclerosing cholangitis, 30% had normal concentrations of IgG4 disease. Conclusions. IgG4-related cholangiopathy is difficult to differentiate from primary sclerosing cholangitis, requires a high index of suspicion. While IgG4-associated cholangitis responds favorably to steroids no primary sclerosing cholangitis.

007 CLINICAL RESEARCH - LIVER TRANSPLANTATION
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Introduction. Conversion to Sirolimus (SRL) has been used in patients with calcineurin inhibitor (CNI) nephrotoxicity in orthotopic liver transplant (OLT). Objective: Compare renal and metabolic outcomes in long-term OLT in patients under CNI vs CNI to SRL conversion (CNI/SRL). Material and methods. Retrospective study with 64p post-OLT. CNI group (n = 31) vs CNI/SRL (n = 33). Conversion to SRL: early < 12 months (M) or late > 12M. MRDR-6 equation was used to evaluate glomerular filtration rate (GFR). Metabolic outcomes: glucose (GLU), cholesterol (CHOL) and triglycerides (TG). Data was registered at 6M, 12M and cumulative follow-up (Acum), post-OLT in CNI group and post-conversion in CNI/SRL group. Results. Pre-OLT characteristics CNI vs CNI/SRL: x age 45y vs 55y (p = 0.003); x follow-up 58 ± 48 vs. 68 ± 40 M; diabetes mellitus type 2: 32 vs. 36% (p = 0.80); GLU: 99 ± 35 vs 123 ± 72 (p = 0.02); GFR: 109 ± 53 vs 76 ± 53 (p = 0.02). Etiology CNI vs. CNI/SRL: HCV (23 vs. 34%), ALD (0 vs. 27%), NASH (19 vs. 12%), AIH (32 vs. 18%) and others (26 vs. 9%). Conversion to SRL was due to renal
dysfunction (n = 27), neuropsychiatric symptoms (n = 3), acute cellular rejection (n = 1) and other causes (n = 2). GFR-MDRD (mL/min) at follow-up CNI vs. CNI/SRL 6M: 74 ± 41 vs. 65 ± 19 (p = 0.02); 12M: 79 ± 46 vs. 65 ± 21 (p = 0.009) and Acum: 65 ± 34 vs. 64 ± 27 (p = 0.44), respectively. Patients with renal dysfunction (n = 27): 17p early conversion and 10p late conversion. GFR pre-OLT vs. pre-SRL us. Acum in early conversion group: 62 ± 24 vs. 38 ± 15 us. 63 ± 22 (p < 0.05); late conversion group: 72 ± 32 vs. 46 ± 15 us. 49 ± 26 (p = 0.09), showing renal function recovery in patients with early conversion to SRL. CNI vs. CNI/SRL GLU 6M: 119 vs. 129 (p = 0.35); 12M: 124 vs. 130 (p = 0.50) and Acum: 118 vs. 108 (p = 0.05); COL 6M: 168 vs. 220 (p = 0.03); 12M: 197 vs. 198 (p = 0.20) and Acum: 205 vs. 198 (p = 0.19); TG 6M: 143 vs. 258 (p = 0.05); 12M: 133 vs. 206 (p = 0.05) and Acum: 163 vs. 213 (p = 0.34), respectively. Biopsy proven acute rejections: CNI n = 5(16%) vs. CNI/SRL n = 2(6%).

Conclusions. SRL demonstrated a significant improvement in renal function in patients that discontinued CNI < 12 months post-OLT, reverting CNI nephrotoxicity. Higher levels of CHOL and TG in CNI/SRL group at 6M and 12M < 12 months post-OLT, reverting CNI nephrotoxicity. Higher levels of GLU were seen in CNI/SRL group at cumulative follow-up.

### Table 1 (003). Cytokines levels.

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<th>pg/mL</th>
<th>PT</th>
<th>PR</th>
<th>12 H</th>
<th>24 H</th>
<th>48 H</th>
<th>72 H</th>
<th>7º D</th>
<th>15º D</th>
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<td><strong>IL-6</strong></td>
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<td>C</td>
<td>327 ± 219</td>
<td>465 ± 179</td>
<td>421 ± 210</td>
<td>425 ± 230</td>
<td>442 ± 236</td>
<td>331 ± 203</td>
<td>356 ± 129</td>
<td>417 ± 184</td>
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<td>PR</td>
<td>210 ± 91</td>
<td>350 ± 401</td>
<td>457 ± 301</td>
<td>396 ± 279</td>
<td>259 ± 127</td>
<td>280 ± 153</td>
<td>337 ± 96</td>
<td>254 ± 106</td>
<td>227 ± 139</td>
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<td><strong>TNF-αα</strong></td>
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<td>C</td>
<td>140 ± 116</td>
<td>159 ± 247</td>
<td>199 ± 342</td>
<td>245 ± 331</td>
<td>123 ± 174</td>
<td>38 ± 5</td>
<td>104 ± 129</td>
<td>83 ± 92</td>
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<td>PR</td>
<td>378 ± 400*</td>
<td>459 ± 335</td>
<td>319 ± 373</td>
<td>244 ± 167</td>
<td>351 ± 386</td>
<td>400 ± 135*</td>
<td>31 ± 16</td>
<td>243 ± 296*</td>
<td>342 ± 440*</td>
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<td><strong>ICAM-1</strong></td>
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<td>C</td>
<td>1,689 ± 229</td>
<td>1,508 ± 401</td>
<td>1,676 ± 266</td>
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<td>1,872 ± 397</td>
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<td>1,811 ± 350</td>
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<td>PR</td>
<td>1,793 ± 657</td>
<td>1,711 ± 396</td>
<td>2,201 ± 371</td>
<td>1,712 ± 319</td>
<td>1,225 ± 324</td>
<td>1,643 ± 624</td>
<td>1,931 ± 166</td>
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<td>1,668 ± 523</td>
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<td><strong>VEGF</strong></td>
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<td>C</td>
<td>297 ± 250</td>
<td>241 ± 276</td>
<td>335 ± 560</td>
<td>287 ± 451</td>
<td>409 ± 358*</td>
<td>169 ± 156</td>
<td>258 ± 197</td>
<td>219 ± 154*</td>
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<td>163 ± 134</td>
<td>211 ± 92</td>
<td>145 ± 82</td>
<td>63 ± 19</td>
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*p = < 0.05.
process, to remedy the IRI have adopted different strategies, such as remote ischemic preconditioning (RIP). **Objective.** Determine whether the RIP modulates the mechanisms involved in the IRI in liver transplant recipients by cytokines (TNFα, IL-6), intracellular adhesion molecules (ICAM-1) and factor of vascular epithelial growth factor (VEGF). **Material and methods.** Eight patients, 4 controls (C) and 4 under PIR were evaluated in phases, pre-transplant (PT), 90 min. Post-reperfusion (PR), 12, 24, 48.72 h (H) and 7, 15, 30 days (D). **Results.** The results are shown in the table 1. Significant difference (p < 0.05) was found between the groups for the following variables: TNFα in the PT phase (p = 0.040), in the 72 H phase (p = 0.028), in phase 15 D (p = 0.016) and 48H VEGF in phase (p = 0.011), in phase 15 D (p = 0.014). **Conclusions.** TNF was observed with a significant elevation in PIR group vs. C group in phases 72 H, 15 D and 30 D. In C Group VEGF was found significantly higher than the PIR group in phases 15 D and 48H. IL6 and ICAM-1 show no changes in any of the phases between groups. We need to increase the number of patients to infer the involvement of these mediators of inflammatory response in the LT. This project was fully sponsored by CONACyT-2012-182653.

**004 PHYSICAL ACTIVITY AND INTAKE OF MACRO AND MICRO NUTRIENTS IN POST OLT PATIENTS**


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**Background.** After orthotopic liver transplant (OLT), the sedentary lifestyle and return to dietary habits advantage high caloric intake and development of such as metabolic syndrome. **Aim.** Determine the level of physical activity and intake of macro and micro nutrients in post OLT. **Material and methods.** In these study were evaluated 65 patients post OLT, whit the International Physical Activity Questionnaire (IPAQ) to evaluated the physical activity (low < 600 MET-minutes/week, moderate > 600 MET-minutes/week and high > 1,500 MET-minutes/week), and the Cuestionario de Frecuencia de Consumo of the Instituto Nacional de Salud Pública, was analyzed whit the SNUT program. The data were analyzed with SPSS statistics program version 21. **Results.** Of the 65 patients evaluated 36 (55%) male and 29 (45%) female with a middle age of 53 years, 1.65 height, 68.6 Kg, BMI 25 kg/m² and middle calories intake of 2,200kcal; 15% proteins, 51% carbohydrates and 34% fat. The 62% of male and 53% of female have intake more than 2,000 kcal, being higher fat intake (> 30%) in the female (78%). The 55% have overweight or obese. Insufficient intake of calcium was found in 71%, iron in 77%, vitamin D in 91%, and adequate or high intake of magnesium in 86%, zinc in 78%, with intake < 3 gr of sodium in the 95% of patients. The 34% have a low physical activity, 52% moderate and 14% high, predominantly low and moderate physical activity in men. The 45% have a intake more than 2,000 kcal with a low or moderate physical activity 19 and 29% receptively. **Conclusions.** There is a high intake of calories, fat, moderate in sodium and deficient in micro nutrients, with a low or moderate physical activity, contributing to weigh gain post OLT, for these reasons is important to perform a nutritional intervention and monitoring. The authors declare that there is no conflict of interest.
population. HCV is related to RI that regardless of blood glucose levels is associated to twice hypertension (HAS), cardiovascular disease three times and 8 times more DM.

Objective. To describe the incidence of MS in patients OLT and etiologies most frequently associated. Materials and methods. Retrospective, cross-sectional and descriptive study which included post OLT patients. All clinical charts were reviewed to obtain the demographic and clinical characteristics, and the following variables were analyzed: gender, age at the time of transplantation, body weight (kg), size (cm), body mass index (BMI), lipid profile, fasting glucose, and blood pressure; as well as the pharmacological treatment for diabetes mellitus (DM), arterial hypertension (AHT) or dyslipidemia (DLP), pre and post-transplantation. For MS diagnosis, the NCEP-ATPIII were used, frequencies and correlations of etiologies leading to OLT analyzed. The statistical analysis with a SPSS v20.0 (< 0.05) p-value was considered statistically significant. Results. Ninety-two patients transplanted between year 2005-2014, 53% men with a median age of 47 years (16-67), the main causes were HCV (38%), NASH (11%), cryptogenic (9%), CHAN (8%) and others. Of the total, 30% developed SM to post transplant year. According to the etiology, HCV (39%) developed SM, NASH (25%), cryptogenic (11%), CHAN (7%), CBP (7%) and (3.6%) HAI, overlying syndrome and other respectively. In the binary logistic regression analysis adjusted for gender, pre transplant BMI and age, etiology with increased risk of developing SM year was NASH (OR: 2.16, 95% CI 0.12-37.9) followed by Cryptogenic, age, etiology with increased risk of developing SM year was NASH (OR: 2.16, 95% CI 0.12-37.9) followed by Cryptogenic, vascular disease three times and 8 times more DM.

Introduction. In patients who received liver transplant the prevalence of metabolic alterations and development of metabolic syndrome is high. Recent studies have been focused on levels of 25 hydroxy vitamin D (25-OH-D) and serum magnesium in this event. There are not studies on this relation in patients after liver transplantation. Objectives. Assess the prevalence of deficiency and insufficiency of vitamin D and magnesium and its correlation with the lipid profile of patients after liver transplantation. Material and methods. A Nested case control study was performed in patients who received liver transplantation in the INCMNSZ. Men and BMI pre transplant also influenced. The authors declare that there is no conflict of interest.

007 BODY COMPOSITION AND QUALITY OF LIFE WITH NIGHT BCAA SUPPLEMENTATION IN PATIENTS VALUED FOR OLT


Background. Protein-energy malnutrition (PEM) is associated with complications pre and post OLT (infections, hospital stay and mortality). It is suggested calorie-protein supplementation in patients with PEM overnight with carbohydrates and branched chain amino acids (BCAA) to improve nutritional status and reduce muscle loss. Objective. Evaluate the effects of BCAA supplementation night for one month and impact on body composition, quality of life and dynamometry hand. Material and methods. Twenty-one patients evaluated for (OLT) received a nutritional supplement with BCAA and calories (Enterex Hepatic®, 110 g). Inclusion criteria were: phase angle < 5.4° measured by bioelectrical impedance, grade B or C in the subjective global nutritional assessment or handgrip strength < 30 in men and < 20 in women (measured by no dominant dynamometry). Body composition were analyzed using body plethysmography (fat and free mass) and by anthropometric parameters (weight, height, body mass index (BMI), mean arm circumference (MAC), muscle arm area (MAA) and tricipital skinfold). Quality of life using the questionnaire SF36v.2 at the beginning and after 30 days of supplementation night. Adherence to treatment was measured by a 24-h recall and sheet attachment to supplement. Statistical analysis was made using SPSS v.20. Changes were considered as significant p < 0.05. Results. 10 women and 8 men were enrolled in a non-controlled clinical trial, the mean age was (42 ± 11 years). Daily supplementation with BCAA and calories significantly triplicates skinfold (14.6 to 15.4mm p < 0.05) and the handgrip strength (18-20 kg/F p < 0.05). The questionnaire SF-36 quality of life total (1,590-1,849 p < 0.05), physical role (85-169 p < 0.05) and improved vitality all (158-178 p < 0.05). The main adverse effects reported were tiredness and nausea. Conclusions. Supplementation with BCAA and calories improves muscle strength and quality of life in patients referred for evaluation of OLT. As may be an option in the treatment of these patients. The authors declare that there is no conflict of interest.

008 DEFICIENCY AND INSUFFICIENCY OF MAGNESIUM AND VITAMIN D AND THEIR CORRELATION WITH THE METABOLIC PROFILE AFTER LIVER TRANSPLANTATION

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Introduction. In patients who received liver transplant the prevalence of metabolic alterations and development of metabolic syndrome is high. Recent studies have been focused on levels of 25 hydroxy vitamin D (25-OH-D) and serum magnesium in this event. There are not studies on this relation in patients after liver transplantation. Objectives. Assess the prevalence of deficiency and insufficiency of vitamin D and magnesium and its correlation with the lipid profile of patients after liver transplantation. Material and methods. A Nested case control study was performed in patients who received liver transplantation in the INCMNSZ. Magnesium status was defined as deficiency when serum levels were < 1.85 mg/dL, insufficiency 1.85-1.92 and normal 1.93-2.5 mg/dL. Metabolic profile was assessed using fasting glucose and lipid profile (triglycerides, total, LDL and HDL cholesterol). The variables were described as mean and standard deviation, correlation was determined using Spearman’s test. Results. Data of 71 patients were analyzed, where 37 were females and 34 males. The mean age was 51.72 ± 11.45 years old; the main causes of liver transplant were HCV (47.7%), autoimmune hepatitis (15.49%) and non alcoholic fatty liver disease (12.68%); the most frequent comorbidities were DM2 (27%) and hypertension (19.35%). 81.7% used tacrolimus as an immunosuppressive. The deficiency of vitamin D was 59.2%, insufficiency 28.2%, normal 11.3% and elevated 1.4%. In the analysis by gender the deficiency of vitamin D was higher in males than females (63.3 vs. 54.1%). The magnesium status was deficiency 52.94%, insufficiency 17.65%, and normal 29.4%. The statistically significant correlations were: 25-OH-D levels were directly correlated with serum magnesium and vice versa with total cholesterol and triglycerides; the serum magnesium levels did not correlated with metabolic profile. Conclusions. The prevalence of deficiency and insufficiency of vitamin D and magnesium in this
population is high. Low levels of 25-OH-D are associated with increased total cholesterol and triglycerides as well as lower levels of serum magnesium.

**Clinical Research - Drug Induced Liver Injury**

**001 Risk factors for develop acute liver failure and death in patients with idiosyncratic drug induced liver injury**

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**Background.** Idiosyncratic drug induced liver injury (DILI) can lead to liver failure or death. DILI is a diagnosis of exclusion. On the basis of R-value it can be classified into hepatocellular, cholestasis, or mixed types. The hallmark of treatment is withdrawal of the causal agent. Our aim was to describe the main characteristics of patients diagnosed with DILI, and to identify risk factors for develop acute liver failure (ALF) and death. **Material and methods.** Retrospective study. We collected data from medical records of 69 patients diagnosed with DILI, treated between January 2006 and June 2014 at “Hospital General de México”. **Results.** The following drugs were identified as causal agents of DILI: Herbal 28 cases (40.6%); quinolones 9 (13.5%); ceftriaxone, amoxicillin/clavulanate, ketoconazole 6 (8.7%) each one; anti-tuberculosis drugs, carbamazepine 3 (4.3%) each one; diclofenac, oral contraceptives 2 (2.9%) each one; valproic acid, dopamine, tamoxifen 1 (1.4%) each one. The mean age was 38.8 ± 11.3 years; 52 (75.4%) were female; according to R-value 34 (49.3%) had hepatocellular injury, 24 (34.8%) mixed, 11 (15.9%) cholestasis; 27 (39.1%) were obese; ALF occurred in 32 (46.4%) cases, and 10 (14.5%) died. Risk factors for develop ALF were obesity (66.7 vs. 33.3%, P = 0.01; OR 4.0, 95% CI = 1.4-11.1); hepatocellular injury (61.8 vs. 31.4%, P = 0.01; OR 3.5, 95% CI = 1.3-9.5); and herbal (64.3 vs. 25.0%, P = 0.003; OR 30.4, 95%CI = 1.7-543.9). **Conclusions.** Liver damage from drugs is difficult to diagnose, interesting that most patients had intake of herbal, posing a new diagnostic challenge due to increased intake of these products and the lack of control over the sales, distribution and consumption, so it should take into account when we are faced with a patient with abnormal liver function tests.

**002 Impact of drug-induced liver damage in Juárez Hospital of Mexico**

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**Introduction.** Drug-induced liver injury is one of the most difficult diagnoses face gastroenterologists. Different types of presentations and various causative agents make the diagnosis and management particularly difficult. In the United States an annual incidence of 14 cases per 100,000 inhabitants documented. **Objective.** To determine the incidence of liver damage from drugs in the Juárez Hospital of Mexico. **Material and methods.** Patients admitted with abnormal liver function tests and liver damage suspected drug of January 1 to December 31, 2014. Type of study: descriptive cross-sectional and retrospective. Variables analyzed: age, gender, type of induced damage, and MELD score, type of agent involved, ultrasonographic findings. The results were analyzed with relative frequency measures center to obtain percentages, median and average. **Results.** Eight cases were found. The average age was 34.5 years (range 29-43 years), with predominance of males (6 cases), the factors involved are 2 drugs (amoxicillin/clavulanate and antiretroviral) and 6 cases per herbology (blue stick 3 cases, Herbalife 1 case, 4life 1 case, Beto Ramon 1 case), 7 patients developed jaundice like symptoms for which they were consulted, as to the type of damage 4 found with hepatocellular pattern, 1 mixed and 3 cholestatic, average MELD was 23.23 (range 7-48), by hepatic ultrasound 4 patients with hepatomegaly, none of the patients met criteria required of Kings College Hospital, categories of suspicion as CIOMS scale all patients were possible, everyone is underwent liver biopsy which was consistent with liver damage from drugs. **Conclusions.** Liver damage from drugs is difficult to diagnose, interesting that most patients had intake of herbal, posing a new diagnostic challenge due to increased intake of these products and the lack of control over the sales, distribution and consumption, so it should take into account when we are faced with a patient with abnormal liver function tests.
Bile duct paucity (BDP) is a cause of neonatal liver transplantation (LT). Survival was 100% in the autoimmune hepatitis cases and 50% in metabolic diseases. One undetermined case and one with CMV Hepatitis survived. One no determined cause case is alive one year after living related LT. **Conclusions.** In this study autoimmune hepatitis diseases was the most frequent cause of ALF. Survival was related to the cause and the possibility of treatment. All autoimmune hepatitis cases survive in contrast with those with metabolic, viral and undetermined diseases. Organ supply is the limiting factor and a significant number of patient die while waiting LT.

The authors declare that there is no conflict of interest.

**002**

**IMPACT ON THE TIMELY DETECTION OF BILIARY TRACT ATRESIA THROUGH IMPLEMENTATION OF STOOL COLOR CARD**

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**Introduction.** Biliary atresia (AVB) is a process obstructive bile ducts leading to fibrosis, obliteration of the biliary tract and cirrhosis. Has 60% of restoration of bile flow to make portoenterostomy < 90 days old. In our setting > 50% of cases are referred after 3 months so that from January 2013 the Program for Early Detection of AVB was implemented by colorimetric card into the National Vaccination (CNV).

**Aim.** To know the process of using the card as well as the reference time to our hospital for children with AVB from the first level for diagnosis and treatment. **Material and methods.** We included all children with AVB treated between 2010 and 2015. Data for shipping time, age at diagnosis and surgery were the clinical record. For analysis were divided into Group 1: period 2010-2012, and Group 2: period from 2013 to 2015. He questioned the family about the replacement process color card. **Results.** Forty-five children, 29 (64.4%) were females; were 27 (60%) in Group 1 and 18 (40%) Group 2. Was performed portoenteroanastomosis 14 (51.9%) and 13 (72.2%) patients, respectively (p = 0.1). The age in days to surgery: 85 ± 38 vs. 121 ± 41 (p = 0.2); tertiary sent age: 93 ± 44 vs. 116 ± 65 (p = 0.1) and age at diagnosis: 130 ± 85 vs. 137 ± 60 (p = 0.7), respectively. In Group 2 color card no information was given in 50%, 40% CNV gave no color card. Reasons for delay in shipment to third level: conducting studies for hepatitis, prolonged treatment for CMV and administrative problems. **Conclusions.** Our results show that there has been no change in the diagnosis and treatment for AVB. It is necessary to strengthen the information and maintain close surveillance program at all levels.

The authors declare that there is no conflict of interest.

**003**

**BILE DUCT PAUCITY EXPERIENCE IN A THIRD LEVEL PEDIATRIC HOSPITAL**

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**Background.** Bile duct paucity (BDP) is a cause of neonatal cholestasis. There are two types: syndromatic (Alagille syndrome) and non-syndromatic associated to genetic, metabolic, infectious and immunological causes. **Aim.** To describe the presentation and outcome of children with BDP. **Material and methods.** A retrospective and descriptive review of clinical, biochemical data and outcome in children with histologic diagnosis of BPD in the last 10 years was done. **Results.** Twelve cases were found, 7 syndromic type and 5 the non-syndromic. Mean age at diagnosis was 3.5 months, 7 females. Jaundice presentation was present at birth in 8/12. Gestational age and birth weight was lower in the non-syndromic than syndromic (mean 2.4 vs. 3.5 kg). Syndromic children had facial dysmorphia (5), heart disease (7), embryotoxin (4) and vertebral malformations (3). AP and GGT values were higher in the syndromic type. During follow up (6 months to 12 yr) the syndromic developed portal hypertension (2), intractable pruritus (3), xanthomatosis (2); one liver transplant was performed and 3 remain on the waiting list; one patient admitted with Kasai developed recurrent cholangitis. Non-syndromic associated causes were CMV infection in 2, multifactorial in 2 and not determined in 1; all cases had improvement outcome. **Conclusion.** Our results show that biochemical and clinical data of children with BDP differentiate between the two types of BDP. Syndromic children underwent complications and listed for liver transplant in contrast with non-syndromic type who had good outcome. BDP can resemble other causes of neonatal cholestasis and liver biopsy is important to avoid unnecessary surgery.

**004**

**CONGENITAL HEPATIC FIBROSIS, A CASE REPORT**


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**Introduction.** Congenital hepatic fibrosis is an autosomal recessive disorder characterized histologically by fibrosis periportal and perilobular, with thick bands containing distorted structures that resemble bile ducts, structures that can expand and form microcysts not communicate with the biliary tract, this derivative lack of ductal plate remodeling resulting persistent embryonic bile ducts. It is associated with Caroli disease, choledochal cyst, renal dysplasia and autosomal recessive polycystic kidney disease and risk of cholangiocarcinoma. Usually diagnosed between 3-10 years of age, affects both sexes equally. With normal laboratory or fluctuating elevated serum transaminase levels with elevated alkaline phosphatase. USG: areas of increased echogenicity, splenomegaly and hepatomegaly. Liver biopsy is a very important diagnostic tool. Treatment is through control of the manifestations of portal hypertension, if suspected cholangitis antibiotics; liver transplantation. **Case report.** Female 2 years 8 months, mother of 18, regular prenatal care, adequate intake of folic acid, iron and calcium, risk of abortion at 3 months of gestation, born by cesarean prematurity as consequence of rupture of membranes with 30.4 sdg APGAR 8/9, weight 1,700 gr size.
50 cm, remained hospitalized for 20 days with headboard without requiring mechanical ventilation. At month old she had been hospitalized 10 times for respiratory infections. During these hospitalizations, she was diagnosed polycystic kidney disease, splenomegaly and hepatomegaly, which was performed AMO is reported without abnormalities. Liver biopsy was performed her which reports changes characteristic of ductal plate malformation with extensive fibrosis. **Conclusions.** Diagnosis of Congenital Hepatic Fibrosis should be suspected in children with persistent hepatomegaly to begin the study and proper handling. The general pediatrician should know this disease to derive timely specialist and not delay its management.

**005**

**SMALL INTESTINAL BACTERIAL OVERGROWTH FREQUENCY IN PEDIATRIC PATIENTS WITH CHRONIC LIVER DISEASE**

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Background. The child with chronic liver disease (CLD) may experience complications with some similarities to adult, such as metabolic abnormalities, cholestasis and infections. Small intestinal bacterial overgrowth (SIBO) occurs when bacterial counts are abnormally high in the small intestine (> 10⁸ CFU/mL). From the noninvasive methods, lactulose breath test is often used for the diagnosis. It is known that the SBI is prevalent in children with persistent hepatomegaly to begin the study and proper handling. The general pediatrician should know this disease to derive timely specialist and not delay its management.

**Objective.** To determine the frequency of intestinal bacterial overgrowth syndrome in pediatric patients with CLD. Transversal, prospective study.

**Material and methods.** Patients with CLD were included during 2 years. Data was collected from the clinical evaluation, liver function tests, Child-Pugh score. SIBO was considered positive with a lactulose breath test value ≥ 20 parts per million (ppm). Statistical analysis: 28 patients were studied, with ages ranging from 3m-15 years (mean age 6 years); 12 male (43%) and 16 female (57%), 16 had ascites (57%). A positive lactulose breath test was obtained in 19 cases (68%); according to Child Pugh score test was positive: 9/16 with Child A (56%), 6/8 (75%) B and 4/4 (100%) Child C. Patients with serum albumin low (< 3.2 g/dL) and ascites showed a high frequency of SIBO in 16/16 patients (100%). **Conclusion.** This study showed that children with CLD has a high frequency of SIBO, which increases directly proportional to the severity of liver disease. Hypoalbuminemia and ascites are parameters to explore as predictors of SIBO in prospective study with more patients.

**002**

**DETECTION OF LIVER FIBROSIS BY NONINVASIVE METHODS IN PATIENTS WITH PSORIASIS**

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**Background and aim.** Liver fibrosis is considered one of the major adverse effects secondary to therapeutic agents used in the treatment of psoriasis. Currently, the prevalence of liver fibrosis in this patient is unknown. The aim of this study was to describe the prevalence of liver fibrosis in patients diagnosed with psoriasis. **Material and methods.** We evaluated 127 patients with psoriasis under treatment with one or more medications. Demographic and biochemical data were collected; liver fibrosis was determined by four noninvasive methods: NAFLD Score, APRI, Fib4 and FibroScan®. **Results.** The sample included 46 women (36.2%). The prevalence of liver fibrosis by each noninvasive method was: NAFLD Score 4.6% (n = 6); APRI 4.6% (n = 6); Fib4 3.9% (n = 6); FibroScan® > 9 kPa 15% (n = 9) and FibroScan® > 12 kPa 8.7% (n = 11). In logistic regression analysis treatment with Adalimumab was associated with presence of advanced liver fibrosis (> 12 kPa) (OR 12.4; 95%CI 1.8-84.0, p < 0.05). **Conclusions.** The prevalence of liver fibrosis in patients with psoriasis is high. In clinical practice screening of liver fibrosis is important to establish adequate treatment schemes.
BANTI SYNDROME INCIDENCE IN A TERTIARY CENTRE

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Introduction. Banti syndrome or idiopathic portal fibrosis is a disorder of unknown etiology characterized by portal hypertension, splenomegaly with or without hypersplenism and preserved liver function. In the West it is more frequent in females and in the fifth decade of life. Its pathogenesis is still under investigation, have been implicated prothrombotic states and infections. Objective. To determine the frequency and epidemiological characteristics of Banti syndrome in Juarez Hospital of Mexico. Material and methods. A retrospective cross-sectional study was conducted, statistics are expressed in percentages and averages. I included were patients who underwent liver Doppler ultrasound in the period March 1, 2012 to February 28, 2015 with reports of portal hypertension without cirrhosis data Doppler ultrasound or by laboratory tests. Results. Four cases were found. The average age was 37 years (range 28-45), female gender predominance (ratio 3: 1), average body mass index 26.67 (range 23.43-27.6) one case diagnosed with type 2 diabetes mellitus. Banti syndrome occurred in 2.35% of patients with portal hypertension by Doppler ultrasound liver. The etiology of one of the cases was Evans syndrome, the remaining three cases, no etiology remains. 75% cases presented ascites. In lab tests, mean hemoglobin was 9.02g/dL (range 7.6-11g/dL), thrombocytopenia with an average of 135,000 platelets (range from 59,000 to 200,000), leukocytes average 5792 (range 3,510-7,860), average neutrophil 3990 (range 2,870-5,240), lymphocytes average 1,222.5 (range 320-2,120), total bilirubin 1.1 mg/dL (range 0.8-1.6), albumin 4 g (range 3.5-4.3). Average spleen volume Doppler ultrasound liver was 650.75 cc (range 376-1,044). Only 25% (1 case) presented varical bleeding secondary to large esophageal varices Baveno. Conclusion. The predominant sex and etiology of one case coincide with those reported in the literature. It is a disease underdiagnosed in our country, although not the most common cause of portal hypertension, it is important to identify for proper handling. The authors have no conflicts of interest.

GIANT LIVER CYST TREATED WITH PERCUTANEOUS DRAINAGE AND SCLEROTHERAPY.

CASE REPORT

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Background. Hepatic cysts are congenital malformations occurring in 4 to 5% of the adult population, being more frequent in women with a 5: 1 in most cases are asymptomatic and require no treatment, serving for the producing symptoms caused by the growth of the cyst with compression neighboring organs usually when it reaches a size of 5-10 cm. Complementary diagnostic imaging such as ultrasound and CT scan are required and can be treated expectantly, percutaneous or surgical drainage. Case report. Male 70 years old with no history major, begins with progressive increase in abdominal girth, right upper quadrant pain, and weight loss unquantified. The physical examination with increased in the waist circumference from epigastric predominance was observed in the mesogastro a tumor of approximately 10 x 10 cm, involving the right upper quadrant and epigastric, mesogastros. Study protocol was started evidencing altered liver function tests, abdominal USG: enlarged liver, by intraparenchymal cyst, abdominal CT: homogeneous liver, hypodense in liquid range, ovoid morphology, smooth edges, thin, without internal septa of 20.2 x 20.1 x 14.8 cm, is sent to interventional radiology for percutaneous drainage quantified at 4,800 cc, later sclerotherapy performed with Polidocanol in 4 sessions, and 40 days after ultrasonographic screening hepatic cysts are observed septate so we proceeded to retreat drainage tube with normal liver tests controls. Conclusions. Aspiration alone has not been effective in preventing recurrence, surgical intervention has so far been the only effective treatment available however this involves considerable morbidity. Has been recently reported that extraction by puncture, aspiration + alcohol injection is a simple procedure, inexpensive, low morbidity and mortality as well as low recurrence, and could be the treatment of choice for symptomatic congenital cysts.

FLUOROSCOPY GUIDED PERCUTANEOUS LIVER BIOPSY. HOSPITAL JUAREZ DE MEXICO EXPERIENCE

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Background. Histological evaluation of the liver tissue remains essential part of the diagnosis, assessing prognosis and in tailoring treatment of multiple liver diseases. The technique originally described in 1958 by Menghini percussion based hepatic parenchyma, has now fallen into disuse due to its high rate of complications and has been replaced by image guided mainly tomography and ultrasound techniques. Fluoroscopy gives us an image similar to an X-ray in real time to easily identify the hepatic parenchyma and facilitates accurate biopsy with needle visualization. In our center this technique is used for taking liver biopsy, in cases where parenchymal disease is suspected, and CT-guided biopsy for the case of single hepatic lesion or neoplasia. Material and methods. Liver biopsies performed between January and December 2014 were reviewed, the technique used, the requesting service, indications for liver biopsy, complications and the influence of hepatic histology on subsequent patient management was assessed. Results. A total of 62 percutaneous biopsies, of which 46 (74%) were guided by fluoroscopy, and 16 (26%) were guided by CT. There were no complications reported in 38 patients (61%), the main complication was pain at the
puncture site which occurred in 24 patients, only 1 patient had 1 wall hematoma with secondary anemia, one week after the procedure, which required hospitalization. There were no differences in complications between the two groups. The main indication for liver biopsy was metastatic liver, in 18 patients, followed by chronic liver disease under study in 14 patients, fatty liver, hepatic neoplasia, acute liver failure, acute hepatitis and hepatocellular carcinoma suspected. The biopsy has useful confirmation in 31 cases, change in treatment in 14 not influenced in 10 and was confusing in 3 cases. Conclusions. According to this experience percutaneous liver biopsy guided by real-time fluoroscopy appears to be effective and minimally invasive, yet to justify their safety follow up with a greater number of cases is necessary.