

FREQUENCY OF HEPATIC FUNCTION ALTERATION IN MEXICAN PATIENTS WITH COVID-19 AND ITS ASSOCIATION WITH THE SEVERITY OF ACUTE RESPIRATORY DISTRESS SYNDROME: PRELIMINARY RESULTS

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Introduction: COVID-19 is a disease caused by the SARS-CoV-2 virus; atypical pneumonia and sepsis are the most severe manifestations of the disease. There is evidence that the virus affects the liver in different ways. The mechanism of liver damage has not yet been clearly established.

Objectives: To determine the frequency of alterations in the LFT (liver function tests) and its association with the severity of the ARDS (acute respiratory distress syndrome) in patients with COVID-19 and to determine if obesity, DM2 (diabetes mellitus) and HBP (high blood pressure) are associated with the severity of the ARDS.

Material and methods: Descriptive, cross-sectional and observational study of 56 patients with dx of ARDS due to COVID-19; Main variables: glucose, LFT and procalcitonin. Secondary variables: age, BMI, DM2, HBP, the severity of ARDS and days of stay. The frequency of qualitative variables was calculated in percentages, measures of central tendency and dispersion were determined for quantitative variables and the association between the increase in the parameters of the LFT and the severity of ARDS by calculating the Spearman correlation coefficient and the Mann-Whitney U test, stratifying according to those who survived or died. The medians of the quantitative values of the LFT between living and deceased were compared with the Mann W. U test for independent samples; due to the small sample size and the fact that the normality requirement was not met, statistically significant values were considered with $p < 0.05$.

Results: Of the 56 patients, 57% are women, all had tomographic data compatible with COVID-19. 41% presented moderate ARDS and 34% severe; 45% died. In the living, the frequency of DM2 and HBP was 22% in severe ARDS; An increase in AST (Aspartate aminotransferase) was found in 67% of admissions and in 100% there was an increase in its maximum peak. In mild ARDS, 33% of the living had increased GGT (gamma glutamyl transferase) at admission and 78% in severe ARDS. There was a statistically significant association between the increase in LDH (lactic dehydrogenase) at the maximum peak and the severity of ARDS ($p = 0.047$), the GGT at admission almost reached the statistically significant p value ($p = 0.053$), with a Spearman coefficient of 0.354 ($p = 0.051$). In the deceased, the frequency of DM2 in severe ARDS was 40%. 100% of those who died with severe ARDS had GGT and LDH increased values at their maximum peak. 100% with moderate ARDS and 90% of the severe ones had hypoalbuminemia upon admission, with a significant association with ARDS severity ($p = 0.033$). The LDH values at the maximum peak also showed a significant association with ARDS severity ($p = 0.043$) with a Spearman coefficient of 0.413 ($p = 0.040$).

Discussion: To date, this study is one of the few that has investigated the effects of the SARS-CoV-2 virus on liver function and its association with the severity of ARDS in Mexican population. Although our study has the weakness of having a small sample size, it has the strength of being carried out in a hospital that was converted into a COVID hospital, with which we will have access to data from a high number of patients, which will allow comparison alterations in liver function in living and deceased patients and relate it to the severity of ARDS.

Conclusions: Most of the patients had no history of DM2 or HBP; a large percentage had overweight / obesity and hyperglycemia on

admission. There is a high frequency of patients who have alterations in LFT; however, with this sample, it was only possible to determine that the increase in LDH at the maximum peak during hospitalization and hypoalbuminemia on admission are associated with the severity of ARDS.

The authors declare that there is no conflict of interest.

<https://doi.org/10.1016/j.aohep.2021.100618>

RELIABILITY FACTORS FOR THE MEASUREMENT OF HEPATIC STEATOSIS BY MEANS OF A CONTROLLED ATTENUATION PARAMETER BY TRANSIENT ELASTOGRAPHY

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Introduction and aim: The controlled attenuation parameter (CAP) allows the indirect measurement of liver fat and the indirect the indirect measurement of liver fat and stiffness by transient elastography. Its diagnostic utility has been validated, but the factors for its reliability are unknown. Therefore, the objective is to evaluate the predictors of CAP quality by transient elastography.

Material and methods: Retrospective, observational design of transient elastography studies from January 2015 to December 2019 for fatty liver screening, fibrosis evaluation and esophageal varices screening, using Fibrosan 502 Touch with M and XL probes according to the manufacturer's recommendations. Sociodemographic and clinical data and reliability measures were evaluated: degree of liver stiffness (kpa), decibels / meter (db/m), interquartile ranges (IQR <40 and IQR <30), number of total and valid measurements. The data are shown in measures of central tendency and dispersion; for the reliability factors, a univariate and multivariate logistic regression analysis was performed.

Results: 1153 studies were analyzed, 52.6% ($n = 606$) were men, with a median age of 54 years [IQR 44-63] and BMI 27.4 kg / m² [IQR 24.1-29.7]. The main indication was fatty liver screening 48.8% ($n = 558$), the median CAP was 262 (215-313) db / m with an interquartile range of 34 (24-47). In 26.2% ($n = 302$) an incorrect probe was used. The factors associated with reliability with IQR <40 were the XL probe (OR 0.34 CI95% 0.26-0.45), age <54 years (OR 0.71 CI95% 0.55-0.92) and IQR kPa <30 (OR 0.48 CI95% 0.28-0.82) and for the reliability of IQR <30 the use of the XL probe (OR 0.31 CI95% 0.23-0.42) and IQR kPa <30 (OR 0.35 CI95% 0.17-0.71). Evaluating only screening studies ($n = 558$), the use of the XL probe and age <54 years maintained an independent association for IQR <40 and with respect to IQR <30, only the XL probe maintained this association. Table 1.

Discussion: Current recommendations for quality CAP studies are to obtain valid measurements with IQR <30 and <40, although there is little evidence to support this. It was demonstrated that regardless of the indication, degree of fibrosis and BMI, the use of the XL probe favors the quality of the study and an adequate evaluation of liver stiffness (IQR kPa <30).

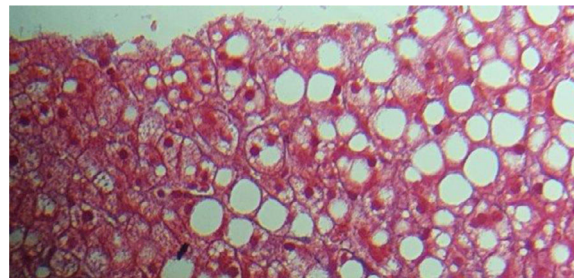
Conclusions: The main factor that favors the reliability of the CAP IQR <40 and 30 is the use of the XL probe regardless of the indication for use and the body mass index.

The authors declare that there is no conflict of interest.

Table 1

Factors associated with quality studies in patients undergoing liver steatosis screening. (n=558)

Variable	IQR <40		IQR <30	
	Univariate OR (CI95%)	p	Univariate OR (CI95%)	p
XL probe	0.26 (0.18 – 0.38)	≤0.001	0.24 (0.14 – 0.39)	≤0.001
Obesity	0.51 (0.35 – 0.75)	0.001	0.57 (0.39 – 0.83)	0.003
<54 years	0.62 (0.43 – 0.89)	0.01	0.67 (0.46 – 0.99)	0.04
IQR kPa <30	0.42 (0.20 – 0.88)	0.02	0.35 (0.15 – 0.84)	0.02
IQR kPa <10	0.74 (0.48 – 1.12)	0.178	0.63 (0.43 – 0.93)	0.02
BMI <27kg/m2	0.57 (0.39 – 0.55)	0.005	0.61 (0.43 – 0.87)	0.008



<https://doi.org/10.1016/j.aohep.2021.100620>

<https://doi.org/10.1016/j.aohep.2021.100619>

COMPARISON OF SEROLOGICAL MODELS OF LIVER FIBROSIS AGAINST TRANSIENT ELASTOGRAPHY BY FIBROSCAN® IN PATIENTS WITH NON-ALCOHOLIC FATTY LIVER DISEASE

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Introduction and Objectives: Liver fibrosis is the most important prognostic factor in nonalcoholic fatty liver disease (NAFLD). The study's objective is to compare the serological models of liver fibrosis (NAFLD-FS, FIB-4, BARD, APRI and AST/ALT) against transient elastography by FibroScan® in patients with NAFLD.

Materials and Methods: Observational, retrolective and cross-sectional study of records of patients diagnosed with liver steatosis by FibroScan® without significant alcohol consumption. A Pearson's correlation and heat maps were used for the correlation between results of FibroScan® and the serological models of liver fibrosis. ROC curves were analyzed to compare the serological models against FibroScan® as the gold standard for clinically significant liver fibrosis.

Results: Data from 976 files were collected, with a prevalence of 63% of liver steatosis by FibroScan® (CAP >232 dB/min) and 1.74% of significant liver fibrosis (LSM >7.0 kPa). In patients with NAFLD, a low positive correlation of NAFLD-FS ($r=0.291$; $p<0.001$) and BARD ($r=0.021$; $p<0.001$) and a very low positive correlation of APRI ($r=0.184$; $p<0.001$) with clinically significant liver fibrosis was reported. No correlation was observed with FIB-4 ($r=-0.003$; $p=0.943$) or with the AST/ALT ratio ($r=-0.039$; $p=0.336$). The NAFLD-FS reported an area under the curve (AUC) of 0.838 (95%CI 0.76-0.91) and the APRI of 0.797 (95%CI 0.68-0.92) compared to FibroScan® for clinically significant liver fibrosis (Figure 1).

Discussion: Liver biopsy is an invasive method and the gold standard for evaluating liver fibrosis; however, it is not exempt of complications. Transient elastography by FibroScan® is a non-invasive and validated method but with limited availability and accessibility. Serological models are widely available and can be easily used in daily practice. In a previous study, the NAFLD-FS reported an AUC of 0.72 (95% CI 0.60-0.83) compared against liver biopsy, which is comparable to the AUC reported in this study against FibroScan®.

Conclusions: The NAFLD-FS is the serological model for liver fibrosis with the best AUC and correlation with transient elastography in patients with NAFLD and is proposed as an evaluation method in places where FibroScan® or liver biopsy is not available.

The authors declare that there is no conflict of interest.

NEOBUXBAMIA TETETZO AS A CAUSE OF DRUG-INDUCED LIVER INJURY

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Introduction and Objectives: Drug-induced liver injury (DILI) is a rare clinical condition, the incidence is estimated from 14 to 19 cases per 100,000 population per year, it is responsible of 3 to 5% of jaundice hospitalizations, and it is the most frequent cause of acute liver failure in many of the western countries. Neobuxbaumia tetetzo is a species of flowering plant of the Cactaceae family, endemic to Mexico, distributed in Puebla and Oaxaca, and has been used within Mexican cuisine, without studies that establish the safety of its consumption, which predisposes to undocumented adverse effects, including probable liver injury.

Materials and Methods: The patient is a 19-year-old male, high school student and employee of a private company, single, originally from Tehuacán, Puebla, resident of Mexico City. Non-relevant family hereditary background. He denied experiencing any chronic degenerative diseases, allergies or traumas, but reported complications during an appendectomy in May of 2019. Has positive alcoholism, consuming it occasionally in social events; last consumption was seven months prior to the onset of symptoms. He denied the use of drugs, food supplements and herbalism. He began in June 30th of 2020 with asthenia, hyporexia, adinamia, nausea and unquantified fever, pain in epigastrium of moderate intensity, generalized pruritus, conjunctival jaundice and coluria were added, progressed to generalized jaundice, required hospitalization in August 2020. The laboratory results are Total Bilirubin 38.5 mg/dL, Direct bilirubin 26 mg/dL, ALT 60, AST 63, AP 329, GGT 33, General urine test that evidenced bilirubins 6 and urobilinogen 8. An ultrasonography and an abdominal tomography were performed, both reporting vesicular lithiasis, without obstruction or dilation of the bile duct. Subsequently, cholangioresonance was carried out on September 9, 2020, reporting liver gland with homogeneous parenchyma, bile duct without intra and extrahepatic dilation, gallbladder with the presence of lithic of 6.5 mm. Cholecystectomy and liver biopsy were performed, with histopathological result of gallbladder with chronic cholecystitis. Liver biopsy reporting: Hepatic parenchyma with preserved architecture, with few plasmatic and eosinophilic cells, and presence of severe intracanalicular and intracytoplasmic cholestasis corresponding to regenerative changes of grade 0 fibrosis on the Metavir scale and focal microvesicular steatosis, without regeneration nodules. Within its approach, serology Anti-Sm, IgM vs. CMV, IgM vs. Rubella, IgM vs. Toxoplasma, ANAs, anti Ro, SCL70 antibodies, HBV, HCV were negative.