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ORIGINAL ARTICLE

Compare the Efficacy of Aspartate Aminotransferase to Platelet Index (APRI) and FIB-4 with Transient Elastography: FibroScan in Patients with Chronic Hepatitis C

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ABSTRACT

Objective: Compare the efficacy of aspartate aminotransferase in patients with chronic hepatitis with fibro scan to platelet index and FIB-4 with transient elastography.

Study Design: Cross-sectional study.

Place & Duration of Study: Department of Medicine, Azhra Naheed Medical College, Lahore from 1st May 2020 to 31st October 2020.

Methodology: Eleven hundred and fifty patients of both sexes were enrolled. Demographic patients after written consent have been registered. Both patients had a detailed history, clinical review and investigations designed to rule out misunderstanding and partiality in the findings of the research. The diagnosis was perfectly performed for continuing hepatitis C infection, which included various biochemical tests. We contrasted the efficiency of the readily available aspartate aminotrasnferase with the FIB-4 with fibro scansand platelet index for distinguishing progression of hepatitis C virus fibrosis.

Results: Mean age of the patients was 39.14±14.68 years with mean BMI 22.68±9.14kg/m^2. Seven hundred and thirty (63.5%) were females and 420 (36.5%) were males. Almost 70% of the HCV patients were on stage F0-F1 and 6.5% of the patients were in F2 stage and 15.7%, 16.97% of the patients were in F3 and F4. No significant difference was observed regarding mortality rate with p value <0.05.

Conclusion: Aspartate aminotransferase/platelet index and FIB4 are expected to reliably separate cirrhotic and non-cirrhotic stages from the expensive and unusual fibro scan rating of HCV infected patients.

Keywords: Hepatitis C, Fibrosis, Liver, Aspartate aminostransferase (AST)

INTRODUCTION

World Health Organization study of 2017 indicates an alarming situation in Pakistan and ranked Pakistan on number two in hepatitis infections.[1,2] Statistics of 2018 surveys reports that, approximately 18M and 9M Pakistani are infected with hepatitis B and hepatitis C virus. We typically have HCV.[3] HCV is normal. It spreads through many paths, primarily through contact with vertical transmission, sexual contact, blood transfusions, needle stick wounds and as well as through IV medications.[4]

In tradition, liver biopsy was a gold standard for fibroid staging[5], but it is an invasive procedure requiring professional workforce handling which provides patients with discomfort and substantial costs. In addition, there could be internal bleeding. There is also a problem of inconsistency in liver biopsy scoring between observer's inability to track development, and a sampling error of up to 30%.[6]

Cirrhosis eventually leads to the start of many decompensating events which lead to decompensated liver disease.[8] The procedure is an invasive procedure which is susceptible to intra- and interobactor variations and sampling errors.[9,10] The use of liver biopsy has rapidly decreased for treating hepatitis-viral patients, along with effective virological tools for genotyping and for the determination of virus loads and new antiviral medications. In addition to the assessing of hepatic fibrosis, non-invasive approaches can be used to evaluate whether to treat or postpone antiviral therapy, track the patients' reaction to treatment and progression of disease and determine the prognosis. Hepatology has been advanced by the development of inaccessible methods in the last 10years to assess liver fibrosis. Hepatology has developed 12. We analyse strategies for assessing liver fibrosis without invasion and address its advantages and drawbacks in the treatment of viral hepatitis B or C patients.

MATERIALS AND METHODS

This cross-sectional study was carried out at Azhra Naheed Medical College, Lahore and comprised of 1150 cases. Detailed information of all the patients including age, sex, body mass index were recorded after taking written consent. Patients who had any chronic liver disease or found any symptoms of liver cancer and those did not give any written consent were excluded. Chronic HCV infection patients who had only been positive for hepatocellular cancer which was detected byPCR and then sent for HCV-genotyping visiting Lahore's General Hospital, Lahore were included in present study. The research did not involve patients co-infected with HBV/HCV and HCV/HIV who had any clinical results on liver cancer. During this time, a total of 1898 patients were involved. Viral load which was obtained by PCR and biochemical analytes (LFTs), albumins, bilirubin and CBC were quantitatively measure for liver stiffness index. The patients' fibrosis phases have been calculated by Metavir Method from the FibroScan score. If IQR/medium value was < 30 percent, then we found FibroScan results accurate. We have taken 10 FibroScan readings and have seen the average FibroScan value of those readings. Ziol-transient-elastography break points were used: FibroScan 2.5-8.8 are marked as F0–F1; FibroScan, F2 as 8.9-9.6, F3 as 9.7-14.6 and F4as>14.6. FibroScan is marketed as F3. The serum FIs available were checked for the patients FI, API, AAR, FIB-4, FCI, APRI, Pohl and our newly-drawn-up NFI. The data was entered and analyzed through SPSs-25.

RESULTS

The mean age of the patients was 39.14±14.68 years and mean BMI was 22.68±9.14kg/m^2. Ratio of females were 730 (63.5%) greater than that of males 420 (36.5%) males patients (Table 1). The deciding of the fibrous stage between HCV patients reveals that of 1150 patients 700 (60.9%) were fibrotized in stage F0-F1, of which 75 (6.5%) were F2, of which 180 (15.7%) were patients in stage F3 and 195 [16.97%] (Table 2). Eight hundred and fifty five (74.35%) patients were genotype 3a, 270 (23.5%) were 1b and 25 (2.17%) were genotyped 1A (Table 3). The sensitivity, specificity and cutoff points have been determined to validate APRI serum AST platelet ratios and Fibrosis 4 (Table 4)

Table 1: Mean age and anthropometric measurements of study participants

Variable	No.	%
Mean age (years)	39.14±14.68	
Mean BMI (Kg/m^2)	22.68±9.14	
Gender		
Male	730	63.5
Female	420	36.5

Table 2: Division of fibrosis among the enrolled cases

Fibrosis	No.	%
F0-F1	700	60.9
F2	75	6.5
F3	180	15.7
F4	195	16.97

Table 3: Details of genotype of all cases

Genotype	No.	%
3a	855	74.35
1b	270	23.5
1A	25	2.17

Table 4: Sensitivity of APRI and FIB-4HCV

Variable	Sensitivity	Specificity
APRI		
F0-F3	58.22%	70.34%
F4	72.14%	86%
FIB-4 HCV		
F0-F3	53%	55%
F4	54.74%	71.5%

DISCUSSION

Hepatitis C infections and fatty liver diseases lead hepatocellular carcinoma and caused thousands of deaths worldwide. Cirrhosis is a slow process that can take about 30 years for a median infection to occur in various ages, i.e. 15 to 55 years. It can be diagnosed by connective tissue fibrosis and its extension to the hepatic-tissue.[11,12] In the present study, genotype 3a was determined as the most common and these findings reinforce established studies in Pakistan concerning the prevalence of various HCV genotypes. Many of the F0-F1 patients had no or initial fibrosis, followed by cirrhosis (F4). There was no fibrosis stage.

Different researchers have identified the host factors for the development and the eventual development of fibrosis to HCC.[13] Their use is compatible as a non-invasive means of removing the disadvantages of invasive biopsy.[14] The liver fibrosis stage provides the basis for the various treatment regimes. The findings of this research have shown that no such relation of fibrosis stage was determined with gender.[15]

Liver rigidity values have also been linked to esophageal varicose veins. The diagnostic accuracy of TE (specificity lower than 60%) is however too poor to classify in clinical practice of patients with esophageal varicose veins.[16] 58.22% in our F0 sample, while 72.22% in API, but 53% in FIB, we have found 53% in our study. Other non-invasive models, like the AST/ALT ratio or platelet count, may also be a factor.

These results are consistent with those of a study that has shown that liver rigidity values can be as successful as HVPG measurements for the prediction of clinical decompensation patients and portal hypertension complications.[17,18] The recent French[19] has compared the capacity of various non-invasive methods for predicting survival and headache (TE, FibroTest, APRI and FIB-4).

New guidelines suggest that, liver biopsy can only be done if there is opposition in redundant, non-invasive research. In case that transient elastophobia are not cost effective in patients or when diagnostic rates are limited, blood markers can also help predict cirrhosis and advanced stages of fibrosis, as in obesity patients.[20]

CONCLUSION

FIB-4 and AST-to-Platelet Index (APRI) are expected to reliably separate cirrhotic and non-cirrhotic stages from the expensive and unusual Fibro scan rating of HCV infected patients.

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