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FORNS INDEX TO PREDICT FIBROSIS IN PATIENTS WITH CHRONIC LIVER DISEASE

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Abstract:

Objective: *To estimate the Forns index to predict fibrosis in patients with chronic liver disease at tertiary care hospital*

Patients and Methods: *Total Fifty patients, of 12 to 50 years either gender had chronic liver disease by positive HCV RNA PCR and/or HBsAg, and had liver biopsy done for evaluation purposes were enrolled and entered in this six months cross sectional study after informed consent. The brief history was taken and relevant clinical examination was performed while the laboratory investigations include latelet count, γ-glutamyl transferase (GGT), and cholesterol levels. The Forns' index will be calculated through the following equation Forns index = 7.811 – 3.131 x ln platelet + 0.781 x ln GGT + 3.647 x ln age - 0.014 x cholesterol; the Forns score <4.2 excludes the liver cirrhosis / fibrosis. The data was saved on pre-designed proforma while the SPSS 16 was used to analyze the data and to manipulate the mean ±SD, frequencies and percentages.*

Results: *During six months study period total fifty patients with chronic liver disease were evaluate for cirrhosis and fibrosis by non invasive indirect markers (Forns index). The mean ± for age (years) & duration of chronic liver disease (years) for whole population was 38.94±5.62 & 5.81±2.95 respectively. The Forns' index (>4.2) was detected in 36 (72%) patients with chronic liver disease (CLD).*

Conclusion: *The Forns index is accurate noninvasive blood test to predict the existence or absence of significant liver fibrosis in patients with chronic liver disease.*

Keywords: *Forns index, chronic liver disease and Non invasive marker*

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INTRODUCTION:

Chronic viral hepatitis is an important cause of morbidity & mortality, the situation is particularly precarious in the developing countries and estimated that by the year 2020 [1,2], there will be threefold increase in liver cirrhosis and hepatoma from HBV and HCV [3]. In chronic viral hepatitis the prognosis and management are highly dependent on the severity of liver fibrosis [4]. Though the gold standard; the liver biopsy is far from perfect and has significant limitations. This has led researchers to look for other methods to evaluate the liver fibrosis and staging through noninvasive markers which are widely used alternative to liver biopsy [5, 6]

Forns & colleagues estimates the fibrosis index (Forns' index) consists of γ-glutamyl transferase (GGT), platelet count & serum cholesterol level with positive predictive value and 96% negative predictive value as 96% and 66% to detecting the significant liver fibrosis respectively [7-9]. The former study evaluates the role of non invasive marker (Forns' and APRI index) in patients with chronic viral hepatitis and HIV [10]. The medications that impaired the lipid abnormalities and platelet counts can be the matter of concern and leads to half of the patients remains left unclassified [11- 13]. Thus, the present study used non invasive marker top predict cirrhosis / fibrosis in patients with CLD as early evaluation can save the patients from various life threatening complications associated with liver cirrhosis.

PATIENTS AND METHODS:

Total Fifty patients, of 12 to 50 years either gender had chronic liver disease by positive HCV RNA PCR and/or HBsAg, and had liver biopsy done for evaluation purposes were enrolled and entered in this six months cross sectional study after informed consent at tertiary care teaching hospital. The individuals had increased ALT for more than six months, whose PCR remained positive after antiviral therapy were also enrolled, provided had liver biopsy performed within the last six months. The exclusion criteria of the study were the patients with chronic liver disease other than viral origin, decompensated cirrhosis (Child-Pugh class C), already on antiviral therapy and PCR negative after treatment and the patients with insufficient liver biopsy specimen. The brief history was taken and relevant clinical examination was performed while the laboratory investigations include γ-glutamyl transferase (GGT), platelet count & cholesterol levels. The Forns' index will be calculated through the following equation Forns index = 7.811 – 3.131 x ln platelet + 0.781 x ln GGT + 3.647 x ln age - 0.014 x cholesterol; the Forns score <4.2 excludes the liver fibrosis / cirrhosis. The data was saved on pre-designed proforma. The SPSS 16 was used to analyze the data and to manipulate the mean ±SD, frequencies and percentages.

RESULTS:

During six months study period total fifty patients with chronic liver disease were evaluate for cirrhosis and fibrosis by non invasive indirect markers (Forns index). The mean ± for age (years) & duration of chronic liver disease (years) for whole population was 38.94±5.62 & 5.81±2.95 respectively. The demographical and clinical profile of study population is presented in Table 1.

TABLE 01: THE DEMOGRAPHICAL AND CLINICAL PROFILE OF THE PATIENTS

AGE (years)	**FREQUENCY (N=50)**	**PERCENTAGE (%)**
12-19	12	24
20-29	13	26
30-39	17	34
40-50	08	16
GENDER		
Male	27	54
Female	23	46
RESIDENCE		
Urban	30	60
Rural	20	40
Duration of CLD (years)		
<1	05	10
1-3	18	36
3-5	21	42
≥5	06	12
Etiology of CLD		
Hepatitis B	12	24
Hepatitis C	32	64
Hepatitis B and C	06	12
Forns index (>6.9)		
Yes	36	72
No	14	28
Cirrhosis /Fibrosis		
Yes	36	72
No	14	28

DISCUSSION:

Forns X, et al [14], observed an index based on four readily available variables; γ glutamyl transferase, platelet count, cholesterol levels & age confined to subjects with chronic liver disease & constructed a simple score system applying a constant to the obtained formula and set cut of values for considering the probability of low or high significant fibrosis. Hence this noninvasive tool can detect the minimal and progressive liver fibrosis [11]. The subjects with chronic viral hepatitis C without liver fibrosis can be detected with this panel and liver biopsy can be avoided in more than one third of the subjects while the one major advantage of the index is the use of very basic clinical tools [15]. In comparing with the study by Imbert-Bismut (Fibrotest) [16] some of the parameters used can provide a high level of certainty for the existence or non existence of significant liver fibrosis, but the usefulness may be countered by the realities that some of the predictive research tools (α2 macroglobulin, haptoglobin & apolipoprotein A1) not readily available and easily accessible in routine clinical practice at majority of the hospitals. Moreover, the patient population studied in the Imbert-Bismut study [16] consists of high proportion of subjects with severe hepatitis C infection, as indicated by existence of significant fibrosis around 40% of the individuals. In our series significant cirrhosis & fibrosis detected in 36 (72%) of the patients a figure consistent to former study & nearer to the spectrum of the disease burden in the community level. [14]. Furthermore, the index can be comparable to the Fibrotest and observed that the findings of Forns index are reproducible but has slightly less performance than Fibrotest [17]. Major caveats of Forns index include impact of dyslipidemia in subjects with chronic liver disease

[18], cholesterol impaired medications & the platelet estimations reproducibility. The Forns index was better in the prediction of significant fibrosis; it is easily reproducible, based on easily accessible and available blood tests and along with the combination of other markers may avoid the need for liver biopsy [19, 20].

CONCLUSION:

The Forns index is convenient noninvasive serum marker to predict the absence or existence of significant liver fibrosis in patients with chronic liver disease.

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