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COMPARATIVE STUDY BETWEEN FIBROSCAN AND LIVER BIOPSY RESULTS IN CHRONIC HBV INFECTED SOUTH INDIAN PATIENTS.

Gastroenterology

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ABSTRACT

CHRONIC hepatitis B virus infection (HBV) is a serious global health problem .About 257 million people are HBsAg +ve worldwide. Liver biopsy (LB) is considered as the gold standard for assessing liver fibrosis. Due to invasiveness and high-cost, the application of liver biopsy in the evaluation of liver fibrosis is limited. Liver stiffness measurement (LSM) using transient elastography (FibroScan) has been introduced for assessing liver fibrosis with accurate, reproducible, and reliable results. The study aimed to compare and validate the results of fibroscan versus liver biopsy among chronic HBV patients. Methods: Fifty four chronic HBV patients who are having a standard indication for liver biopsy(EASL) were included . Inclusion criteria were males and females above 18 years, HBeAg positive or negative cases with normal or fluctuating liver enzymes. Exclusion criteria included concomitant HCV infection, evidence of liver disease induced by other causes ex:Alcohol were excluded, and age less than 18 years. Patients were subjected to liver biopsy and fibroscan study. Liver biopsy were performed and interpreted in the same laboratory for all the patients. Fibroscan was performed by the same operator for all the patients.

Results: The mean age of our patients was 36. Study population showed male predominance. The mean AST was 28.01U/L and the mean ALT level was 30.2U/L.HBV DNA levels were quite variable with a minimum of <1000IU/ML and a maximum of 1,10,056 IU/ML with a mean of 6135.2. Liver biopsy results showed that 36 cases had a fibrosis score of (F0)/F1 18 cases (F 2/F3). Fibroscan showed 42 patients in F0/F1 and 12 patients in F2/F3. Of total 54 patients fibroscan is able to accurately predict the degree of fibrosis in 46 patients (85%) .Of the remaining 8 patients in whom the fibroscan is not correlating with liver biopsy fibroscan values are in the range of 6-9 kpa. This study shows that fibroscan <6 KPa would exclude significant fibrosis and those with LSM >9 KPa would predict significant fibrosis in which liver biopsies can be avoided. The liver biopsy is required in patients with LSM between 6 – 9 KPa.

Conclusion: Liver stiffness measurement could be used as a predictor for liver fibrosis in chronic HBV patients but still liver biopsy may be required to confirm treatment decisions.

KEYWORDS

INTRODUCTION:

- CHRONIC hepatitis B virus infection (HBV) is a serious global health problem .About 257 million people are HBsAg +ve worldwide. In 2015, hepatitis B resulted in 887 000 deaths, mostly from complications (including cirrhosis and hepatocellular carcinoma)(1). 10-20% of patients with chronic hepatitis B (CHB) infection have liver cirrhosis at first presentation .An additional 20-30% of patients will eventually develop cirrhosis and its complications within one or more decades. Asia has the highest proportion of global chronic hepatitis B (CHB) cases with 75% of all CHB patients concentrated in these countries(2) . CHB is considered to be the major risk factor for cirrhosis, end-stage liver disease and hepatocellular carcinoma . Studies have demonstrated that the risk of liver disease progression in patients with CHB is associated with elevated HBV DNA levels. The goal of therapy for CHB patients is to delay or prevent progression of liver disease by suppressing long-term HBV DNA replication(3) .HBV infected patients with ALT values close to the upper limit of normal were found to have abnormal histology and can be at increased risk of mortality from liver disease especially those above the age of 30 years(4). It is crucial to achieve an accurate and timely diagnosis of liver fibrosis in order to prevent its development to liver cirrhosis.
- Liver biopsy (LB) - the gold standard for assessing liver fibrosis. Due to invasiveness and high-cost, the application of liver biopsy in the evaluation of liver fibrosis is limited. Liver stiffness measurement (LSM) using transient elastography (FibroScan) has been introduced for assessing liver fibrosis with accurate, reproducible, and reliable results(5) .As liver stiffness measurement (LSM) can be expressed numerically as a continuous variable, clinicians can grade the degree of liver fibrosis, even in patients with cirrhosis. Fibroscan in chronic hepatitis, especially of viral etiology, is accepted worldwide, partially replacing liver biopsy (LB) in some countries(6). Whether fibroscan a non invasive investigation can it be used as a replacement for liver biopsy in our population was be studied.

AIMS AND OBJECTIVES .

The aim of the present study was to investigate the diagnostic accuracy of Fibroscan and compare it with liver biopsy for assessing liver fibrosis in patients with chronic hepatitis B (CHB).

To determine whether fibroscan can avoid liver biopsy in patients with CHB.

INCLUSION CRITERIA :

- HBsAg positive ,HbeAg positve/negative , Received no antiviral therapy , who are eligible and willing to undergo liver biopsy according to standard indication of EASL guidelines.

- **Easl guidelines for liver biopsy :**1)Adults >30 years of age with normal ALT and elevated HBV DNA levels >20,000with a family history of HCC or cirrhosis.2)HBV DNA levels above 2000 IU/ml, serum ALT levels above the upper limit of normal (ULN). 3)HBV DNA <2000 IU/ml persistantly elevated ALT for> 3months. 4)HbeAg positive with HBV DNA >2000 and <20,000 IU/ML.

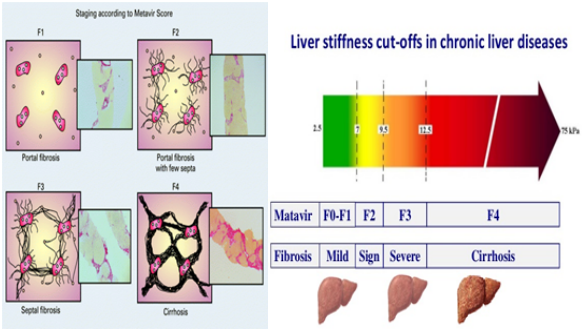
EXCLUSION CRITERIA:

- Infected with hepatitis C virus, HIV infection, Patients who regularly consume >20 g alcohol/week, NASH, Decompensated chronic liver disease, Hepatocellular carcinoma.

METHODOLOGY:

- All patients were subjected to a uniform baseline evaluation. Detailed history regarding possible source of infection, alcohol intake, presence of co morbidities like diabetes, and any past history of decompensation was taken. Complete Liver function tests ,complete hemogram, renal function tests, ultrasonography were done in all patients. Serologies for hepatitis B e antigen(HBeAg), antibodies to HBeAg(anti HBe), Hepatitis C virus(anti HCV), human immunodeficiency virus(HIV) were done .HBV DNA quantitative estimation was done in all the patients. **FIBROSCAN** : All the patients were subjected to fibroscan. At least 10 valid examinations were made for each patient by a single examiner. Patients were excluded from study if success rate was <60% or the inter-quartile range was >30% of the final value.

Liver biopsy Liver biopsies were performed in all patients after explaining the risks and complications of the procedure. All biopsies were done under ultrasonographic guidance using liver biopsy needle.



RESULTS:

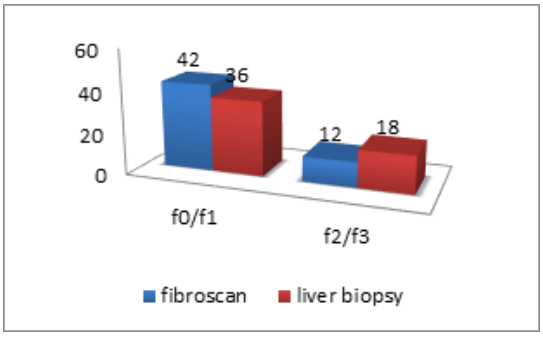
	MINIMUM	MAXIMUM	MEAN	STANDARD DEVIATION
AGE	18	60	36	10.3
AST	14	91	28	15.24
ALT	18	140	30.2	18.26
SERUM BILURUBIN	0.2	1.0	0.62	0.2
HBV DNA	<1000	1,10,056	6135.2	1426
FIBROSCAN	4.5	12	6.1	2.05

HBeAG POSITIVE	HbeAg negative
8	46

Liver biopsy grade	Number of patients
F0	16
F1	20
F2	10
F3	8
Total	54

Fibroscan	Number of patients	cutoff
F0	27	4.9-5.6
F1	15	5.6-7.0
F2	8	7.0-9.5
F3	4	9.5-12
TOTAL	54	

	F0/F1 (LSM <7Kpa)	F2/F3 (LSM>7kpa)
FIBROSCAN	42	12
LIVERBIOPSY	36	18



DISCUSSION:

- This is a comparative descriptive study the results of liver biopsy and fibroscan among chronic HBV south Indian patients who are not candidates for treatment. Most guidelines recommend treatment of chronic HBV for those cases with HBV DNA 2000 and persistently elevated liver enzymes (7). HBV infected patients with ALT values close to the upper limit of normal were found to have abnormal histology and can be at increased risk of mortality from liver disease especially those above the age of 40 years recently changed to 30 years(8).
- In our study we tried to compare the liver biopsy results with the fibroscan results performed to the same patients. The results of our study points to the similarity of fibrosis scores among patients with no or minimal fibrosis (F0) scores in both liver biopsy and fibroscan. Of total 54 patients fibroscan is able to accurately predict the degree of fibrosis in 46 patients (85%) .Of the remaining 8 patients in whom the fibroscan is not correlating with liver biopsy fibroscan values are in the range of 6-9 kpa. This study shows that fibroscan <6 KPa would exclude significant fibrosis and those with LSM >9 KPa would predict significant fibrosis in which liver biopsies can be avoided. The liver biopsy is required in patients with LSM between 6 – 9 KPa. Secondly, histological fibrosis is the most significant predictor of liver stiffness. Similar observations were emphasized by Sporea et al (9). Unlike HBV, transient elastography (TE) is a validated non-invasive tool to evaluate hepatic fibrosis in patients with hepatitis C virus (HCV) infection(10).Also Canavan et al,stated that ultrasound elastography for fibrosis surveillance is cost effective in patients with chronic hepatitis C virus in the UK.

In patients with chronic HBV infection, data regarding LS measurement for fibrosis staging are conflicting(11). One explanation could be that the necro-inflammatory activity in HBV infection can vary with time. In another study done by Seo et al , LS measurements were better correlated with the fibrosis score in patients with chronic HCV hepatitis than in those with chronic HBV hepatitis(12).

Recommendations:

Further large scale studies are required to further assess validity of fibroscan in chronic HBV patients.

Reevaluation of the results of fibroscan during episodes of fluctuation of liver enzymes compared to resting conditions especially among chronic HBV patients.

REFERENCES

1) GANEM D. and PRINCE A.M.: Hepatitis B virus infection-natural history and Clinical Consequences., 3 50 (11): 1118-1129. Doi: 10.1056/NEJMra031087 N. Engl. J. Med., 2000.
2) DI MARCO V., LO IACONO O., CAMMA C., et al.: The long-term course of chronic hepatitis B., 30: 257-264 Hepatology, 1999.
3) CHEN C.J., YANG H.I., SU J., JEN C.L., YOU S.L., LU S.N., HUANG G.T. and ILOEJE U.H.: Risk of hepatocellular carcinoma across a biological gradient of serum hepatitis B virus DNA level. JAMA, 295 (1): 65-73, 2006.
4) ILOEJE U.H., YANG H.I., SU J., JEN C.L., YOU S.L. and CHEN C.J.: Predicting cirrhosis risk based on the level of circulating hepatitis B viral load. Gastroenterology, 130 (3): 678-686, 2006.
5) PAWLOTSKY J.M., DUSHEIKO G., HATZAKIS A., LAU D., LAU G., LIANG T.J., LOCARNINI S., MARTIN P., RICHMAN D.D. and ZOULIM F.: Virologic monitoring of hepatitis B virus therapy in clinical trials and practice: Recommendations for a standardized approach. Gastroenterology, 134 (2): 405-415, 2008.
6) GANNE-CARRIÉ N., ZIOL M., DELEDINGHEN V., DOUVIN C., MARCELLIN P., CASTERA L., DHUMEUX D., TRINCHET J.C. and BEAUGRAND M.: Accuracy of liver stiffness measurement for the diagnosis of cirrhosis in patients with chronic liver diseases. Hepatology, 44: 1511-1517, 2006.
7) REGEV A., BERHO M., JEFFERS L.J., MILIKOWSKI C., MOLINA E.G., et al.: Sampling error and intraobserver variation in liver biopsy in patients with chronic HCV infection. Am. J. Gastroenterol., 97: 2614-2618, 2002.
8) FOUCHER J., CHANTELOUP E., VERGNIOL J., CASTERA L., Le BALI B., et al.: Diagnosis of cirrhosis by transient elastography (FibroScan): A prospective study, Gut., 55: 403-408, 2006.
9) SPOREA I., ROXANA ¸SIRLI, ALEXANDRA DELEANU, ADRIANA TUDORA, ALINA POPESCU, MANUELA CURESCU and SIMONA BOTA: Liver stiffness measurements in patients with HBV vs HCV chronic hepatitis: A comparative study. World J. Gastroenterol., 14; 16 (38): 4832-4837, 2010
10) FONTAINE H., PETITPREZ K., ROUDOT-THORAVAL F. and TRINCHET J.C.: Guidelines for the diagnosis of uncomplicated cirrhosis. Gastroenterol. Clin. Biol., 3 1: 504-509, 2007
11) Ogawa E, Furusyo N, Toyoda K, Takeoka H, Otaguro S, Hamada M, Murata M, Sawayama Y, Hayashi J. Transient elastography for patients with chronic hepatitis B and C virus infection: Non-invasive, quantitative assessment of liver fibrosis. Hepatol Res 2007; 37: 1002-1010.
12) SEO Y.S., KIM E.S., KWON Y.D., PARK S., KEUM B., PARK B.J., KIM Y.S., JEEN Y.T., CHUN H.J., KIM C.D., et al.: Liver stiffness measurement in patients with chronic hepatitis B is not as useful as that in patients with chronic hepatitis C for the assessment of liver fibrosis. Hepatology, 46 (Suppl 1): 842A, 2007.