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Research Article

A CROSS SECTIONAL STUDY OF ASSESSING SEVERITY OF CHRONIC LIVER DISEASE BY FIBROSCAN

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A R T I C L E I N F O

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CLD-Chronic Liver Disease
NAFLD – Non Alcoholic Fatty Liver Disease
CTP score – Child Turcotte Pugh score

A B S T R A C T

Background: Chronic Liver disease is common clinical problem in our country which is associated with a process of progressive destruction and degeneration of liver parenchyma leading to fibrosis and cirrhosis[1].
Material and method: A Single centered cross sectional observational study done at Calcutta National Medical College & Hospital, West Bengal, India.
Result: Of the total 95 subjects 65 subjects i.e 68.42% of subjects had advanced fibrosis with fibroscan reading corresponding to F3, F4 fibrosis. Of the total 60 patients who had CTP grade C which depicted advanced liver disease fibroscan could identify 88.3% of them as grade F4 fibrosis 5% as F3-F4 fibrosis and 1.67% as having F3 fibrosis.
Conclusion: Fibroscan helps in differentiating patients with early liver disease from those with advanced liver disease without needing invasive procedure like biopsy.

INTRODUCTION

Chronic liver disease (CLD) is a common clinical problem in our country. Chronic liver disease involves a process of progressive destruction and degeneration of liver parenchyma leading to fibrosis and cirrhosis[1]. In cirrhosis development of scar tissue causes replacement of normal parenchyma, blocking the portal flow of blood through the liver and disturbs its normal function. Cirrhosis is not synonymous with fibrosis. Cirrhotic patients can often remain asymptomatic until decompensation occurs[2]. Clinical features are the result of pathological changes in liver and reflect the severity of liver disease. The assessment of liver fibrosis is essential for predicting the severity, prognosis and outcome of all forms of chronic liver disease. A liver biopsy is the gold standard for the assessment of liver fibrosis, but it has its limitations, These limitations have led to the development of non-invasive methods of histological assessment which include Transient Elastography (Fibroscan), an ultrasound-based Technique.[3,4,5]

MATERIALS AND METHODS

A Single centered cross sectional observational study, conducted at Calcutta National Medical College & Hospital over a period of 12 months from August 2019 to August 2020. Calcutta National Medical College& Hospital is a tertiary care level hospital in Kolkata, West Bengal, India. . In our study we included all patients diagnosed to have chronic liver disease by clinical, biochemical or radiological features.

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RESULTS

In our study we found out that out of 95 subjects with CLD, 36.84% (35) had alcohol as etiology, 34.74% (33) were Hepatitis B related, 15.79%(15) cases were Hepatitis C related and 12.63% (12) cases were because of NAFLD

Table 1 Etiology of CLD and their CTP grade

		CTP GRADE			Total
		GRADE A	GRADE B	GRADE C	
ETIOLOGY	HEPATITIS C	1(5.26)	4(25)	10(16.67)	15(15.79)
	HEPATITIS B	6(31.58)	7(43.75)	20(33.33)	33(34.74)
	ALCOHOL	11(57.89)	2(12.5)	22(36.67)	35(36.84)
	NAFLD	1(5.26)	3(18.75)	8(13.33)	12(12.63)
Total		19(100)	16(100)	60(100)	95(100)

Of the total 95 subjects 65 subjects i.e 68.42% of subjects had advanced fibrosis with fibroscan reading corresponding to F3, F4 fibrosis. 1.05% had f2-f3 fibrosis, and the rest had minimal fibrosis ranging from F0 to F2. Of the total 60 patients who had CTP grade C which depicted advanced liver disease fibroscan could identify 88.3% of them as grade F4 fibrosis 5% as F3-F4 fibrosis and 1.67% as having F3 fibrosis. Of the total 19 subjects who had CTP Grade A indicating early liver disease, fibroscan report showed 63.16% of them as having

F0-F1 fibrosis and 15.79% as having no fibrosis and 3 i.e 15.79% of the subjects with CTP grade A subjects had advanced fibrosis with fibroscan reporting as F4 and F3-F4 fibrosis.

Table 2 Fibroscan grading in comparison to CTP grade

		CTP GRADE			Total
		GRADE A	GRADE B	GRADE C	
Fibroscan: Fibrosis Grade	F0	3(15.79)	0(0)	1(1.67)	4(4.21)
	F0-F1	12(63.16)	4(25)	2(3.33)	18(18.95)
	F1	0(0)	2(12.5)	0(0)	2(2.11)
	F1-F2	0(0)	2(12.5)	0(0)	2(2.11)
	F2	0(0)	3(18.75)	0(0)	3(3.16)
	F2-F3	1(5.26)	0(0)	0(0)	1(1.05)
	F3	0(0)	2(12.5)	1(1.67)	3(3.16)
	F3-F4	2(10.53)	2(12.5)	3(5)	7(7.37)
	F4	1(5.26)	1(6.25)	53(88.33)	55(57.89)
Total		19(100)	16(100)	60(100)	95(100)

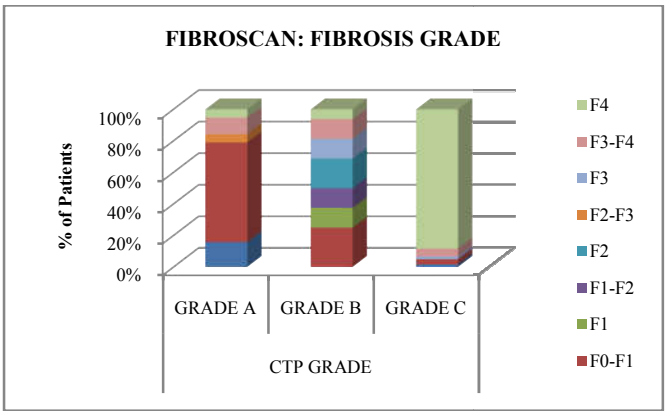

Fig 1 Fibroscan grading in comparison to CTP grade

Alcohol

Out of 35 patients with alcohol as etiology for CLD, 22 were in CTP grade C indicating advanced liver disease, Fibroscan could identify 21 (95.45%) of them as case of advanced fibrosis and 1 (4.45%) as a case with minimal fibrosis. 11 patients had mild disease belonging to CTP grade A, of which fibroscan could identify 9 (81.81%)as case of minimal fibrosis and 2 (18.18%) cases as case of advanced fibrosis.

Table 3 Fibroscan fibrosis grade in comparison with CTP grade in patients with alcohol as etiology of CLD

		CTP GRADE			Total
		GRADE A	GRADE B	GRADE C	
Fibroscan: Fibrosis Grade	F0	0	0	0	0
	F0-F1	9	0	1	10
	F1	0	0	0	0
	F1-F2	0	0	0	0
	F2	0	0	0	0
	F2-F3	0	0	0	0
	F3	0	0	1	1
	F3-F4	1	1	3	5
	F4	1	1	17	19
Total		11	2	22	

Hepatitis B

Out of 33 patients with hepatitis B, 20 were in CTP grade C indicating advanced liver disease, Fibroscan could identify 19 (95%) of them as case of advanced fibrosis and 1 as case with minimal fibrosis. 6 patients had mild disease belonging to CTP grade A, of which fibroscan could identify all 6 (100%)cases as case of minimal fibrosis.

Table 4 Fibroscan fibrosis grade in comparison with CTP grade in patients with Hepatitis B as etiology of CLD

		CTP GRADE			Total
		GRADE A	GRADE B	GRADE C	
Fibroscan: Fibrosis Grade	F0	3	0	0	3
	F0-F1	3	4	1	8
	F1	0	0	0	0
	F1-F2	0	0	0	0
	F2	0	1	0	1
	F2-F3	0	0	0	0
	F3	0	1	0	0
	F3-F4	0	1	0	1
	F4	0	0	19	19
Total		6	7	20	

Hepatitis C

Out of 15 patients with Hepatitis C, 10 were in CTP grade C indicating advanced liver disease, Fibroscan could identify all 10 (100%) of them as case of advanced fibrosis. 1 patient had mild disease belonging to CTP grade A, fibroscan classified it as F2-F3, indicating moderate fibrosis.

Table 5 Fibroscan fibrosis grade in comparison with CTP grade in patients with Hepatitis C as etiology of CLD

		CTP GRADE			Total
		GRADE A	GRADE B	GRADE C	
Fibroscan: Fibrosis Grade	F0	0	0	0	0
	F0-F1	0	0	0	0
	F1	0	1	0	1
	F1-F2	0	1	0	1
	F2	0	1	0	1
	F2-F3	1	0	0	1
	F3	0	1	0	1
	F3-F4	0	0	0	0
	F4	0	0	10	10
Total		1	4	10	

NAFLD

Out of 12 patients with NAFLD, 8 were in CTP grade C indicating advanced liver disease, Fibroscan could identify all 7 (87.5%) of them as case of advanced fibrosis and 1(12.5%) as moderate fibrosis (F2-F3). 1 patient had mild disease belonging to CTP grade A, fibroscan classified it as F3-F4, indicating advanced fibrosis.

Table 6 Fibroscan fibrosis grade in comparison with CTP grade in patients with NAFLD as etiology of CLD

		CTP GRADE			Total
		GRADE A	GRADE B	GRADE C	
Fibroscan: Fibrosis Grade	F0	0	0	0	0
	F0-F1	0	0	0	0
	F1	0	1	0	1
	F1-F2	0	1	0	1
	F2	0	1	0	1
	F2-F3	0	0	1	1
	F3	0	0	0	0
	F3-F4	1	0	0	1
	F4	0	0	7	7
Total		1	3	8	

DISCUSSION

In our study, Of the total 95 subjects we found out that alcohol consumption as the most common etiology for chronic liver disease (36.84%). 65 subjects i.e 68.42% of subjects had advanced fibrosis with fibroscan reading corresponding to F3, F4 fibrosis. 1.05% had f2-f3 fibrosis, and the rest had minimal fibrosis ranging from F0 to F2. Of the total 60 patients who

had CTP grade C which depicted advanced liver disease fibroscan could identify 88.3% of them as grade F4 fibrosis 5% as F3-F4 fibrosis and 1.67% as having F3 fibrosis. Of the total 19 subjects who had CTP Grade A indicating early liver disease, fibroscan report showed 63.16% of them as having F0-F1 fibrosis and 15.79% as having no fibrosis and 3 i.e 15.79% of the subjects with CTP grade A subjects had advanced fibrosis with fibroscan reporting as F4 and F3-F4 fibrosis. Many studies have been conducted comparing fibroscan with liver biopsy in patients with Chronic Hepatitis C and NAFLD. However no study has been found in patients with alcoholic Liver disease and Chronic Hepatitis B.

CONCLUSION

Non invasive screening tool Fibroscan is helpful in categorizing the subjects with advanced liver disease from those with minimal liver disease, hence could be an important tool and replace invasive procedure like liver biopsy in future and thus prevent patients from going through many of the biopsy related problems. However larger studies with longer duration of follow up are necessary to ascertain the exact validity of these non invasive screening tools in assessment of Liver fibrosis.

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