ORIGINAL RESEARCH PAPER

Gastroenterology

CORRELATION BETWEEN LIVER STIFFNESS SCORE & ENDOSCOPIC ASSESSMENT OF PORTAL HYPERTENSION IN PATIENTS OF CHRONIC LIVER DISEASE

KEY WORDS: fibroscan, esophageal varices(OVs), cirrhosis, endoscopy, APRI

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ABSTRACT

We correlated the liver stiffness score obtained on the fibroscan and the grading of esophageal varices (OVs) as done by the endoscopy in patients with chronic liver disease. We performed a cross-sectional study on the patients diagnosed with chronic liver disease (on the basis of Clinical, Radiological & Biochemical Parameter). We collected patient's demographic data and routine investigation reports (liver function test, renal function test, coagulation profile, P_T/INR) Fibroscan and endoscopy results obtained so far. Total 76 patients were included in our study of which 64 were male (84.2%) 12 were female (15.8%). Hepatitis B came out as the most common Etiological condition for the CLD. 32 patients of the study cohort (42.1%) reported to have hepatitis B related CLD. The mean stiffness of the study cohort was found to be 42.7 Kpa on the fibroscan. The scores obtained correlates well with the grading of esophageal varices as identified endoscopically and fits well when calculated statiscally (r= 0.515 & P< 0.001). Hence our study concludes that fibroscan (liver stiffness score) can predict the grading of varices in patients with cirrhosis.

Introduction:-

Variceal bleeding is one of the leading causes of mortality and morbidity in cirrhotic patients [1,2]. The early detection of esophageal varices (OVs) and initiation of primary prophylactic measures corresponds with better disease prognosis and prolongs patient survival. Upper gastrointestinal endoscopy is the gold standard method for the detection of OVs [2-4]. However, endoscopy is an invasive method with potential complications, which outweighs its uses in regular practice [5-6]. Hence prompted the need of noninvasive modalities several reports have evaluated the detection of OVs using noninvasive methods to replace the need for invasive endoscopy [7-9]. The transient elastography using (fibroscan) in currently extensively utilized for the assessment of liver fibrosis, and several, reports have shown its value for the prediction of OVs or variceal bleeding [9-10]. Although different reports have suggested different cut off values[9-12]. The Baveno VI Consensus suggested that patients with a fibroscan score of less than 20Kpa and a platelet count of more than 1,50,000 have low risk for development of varices and endoscopy screening can be deferred [4]. In this study we have made an attempt to establish the correlation between fibroscan score with the grading Of esophageal varices which will help in assesment of patients condition predicting the survival outcome and thus planning the treatment as per the requirement. and thus replacing the need of invasive procedures as diagnostic modalities in future. This study was conducted in Gandhi Medical College (Madhya Pradesh Medical Science University Jabalpur) in the department of Medicine On 76 diagnosed cases of CLD

Material and Method:-

Study Design:- This was a cross- sectional study. The study period was from Sep. 2016 to Feb. 2018. Approval for this study was obtained from the Madhya Pradesh Medical Science University Jabalpur. Ethical Committee.

Inclusion Criteria:-

Patients diagnosed with Portal Hypertension due to Chronic Liver Disease(Various etiologies) by Clinical, biochemical and radiological parameters(ultrasound). (15 - 80 years)

Exclusion Criteria:

Morbid Obesity
Gross / Tense Ascites
Patient who are not giving consent or not willing for endoscopy/fibroscan. and diagnosed cases of EHPVO and NCPF (Isolated Portal vein pathology)

Endoscopy:-

Endoscopies were performed by three senior expert gastroenterologist. We reviewed the endoscopy unit database and the patients records to obtain the results of the upper GI endoscopies. We categorized the endoscopic findings as small grade 1 and 2 varices, large grade 3 and 4 varices.

Statistical Analysis:-

All the data analysis was performed using IBM-SPSS Ver-20 software. Frequency distribution and cross tabulation was used to prepare the tables. Data is expressed as no of patients and percentage categorized data was analyzed using chi-square test. Correlation was established using person correlation coefficient significance was assessed at 5% level.

Result:-

Patient characteristics:

During the study period 76 patients fulfilled the inclusion criteria of them 64 were male and 12 were female mean age was 44.51 years (SD 4.89 years) with significance male predominance.

Table 1: Distribution of patients according to Diagnosis

Diagnosis	No of patients	Percentage
Alcoholic Liver disease	15	19.7
Auto immune hepatitis	1	1.3
Budd chiari syndrome	1	1.3
Hepatitis B Related CLD	32	42.1
Hepatitis C Related CLD	13	17.1
Unknown etiology	12	15.8
Wilson disease	2	2.6
Total	76	100.0

Most of the patients were suffering from Hepatitis B related CLD [32 (42.1%)] followed by Alcoholic Liver disease [15 (19.75)] and Hepatitis C Related CLD [13 (17.1%)].

Figure- 1

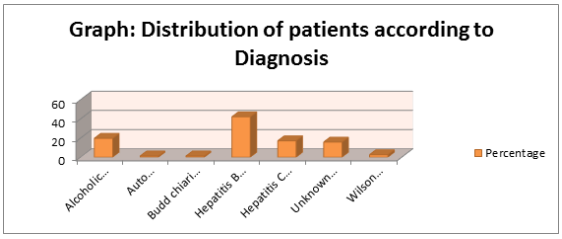


Table 2: Baseline parameters of study cohort

Parameters	N	Minimum	Maximum	Mean	Std. Deviation
Total Bilirubin	76	.40	17.90	2.5133	2.72378
Direct Bilirubin	76	.16	6.80	1.3484	1.45926
AST	76	22.00	2988.00	117.8947	337.28697
ALT	76	6.00	2586.00	96.1066	297.15864
Cholesterol	76	60.00	224.00	142.6053	44.88150
HDL	76	14.00	110.00	34.0395	15.66690
VLDL	76	17.00	98.00	26.1974	9.91433
LDL	76	13.00	108.00	81.5395	25.58095
TG	76	21.00	147.00	76.0132	33.78303
Alkaline phosphatase	76	42.00	1465.00	162.1184	200.22993
Albumin	76	1.60	4.20	2.7503	.68587
Globulin	76	.80	4.57	2.3822	.97603
PT	76	1.08	214.00	21.5266	26.90164
INR	76	1.00	4.20	1.6039	.46653
Hb	76	1.10	13.80	9.2908	2.22951
TWBC	76	33.00	28000.00	6215.9605	3624.93757
Platelet count	76	8200	322000	115081.58	57292.319
Na	76	120	146	136.65	5.030
K	76	3.00	5.30	4.0957	.50480
Urea	76	14.00	128.00	40.2303	21.69114
Creatinine	76	.50	9.00	1.1318	.99574
APRI	76	.15	23.00	2.2438	2.77220
Kpa	76	7.20	75.00	42.7039	20.86878
Child pugh score	76	5	13	8.29	1.711
Varices grading	76	1	4	2.79	0.984

Table 3: Distribution of patients according to Grading of Varices

Grading of Varices	No of patients	Percentage
1	9	11.8
2	19	25.0
3	27	35.5
4	21	27.6
Total	76	100.0

Table 4: Correlation of APRI, Grading, Platelet count, KPA

		Grading of Varices	KPA	Platelet count	APRI
KPA	Pearson Correlation	.514**		.001	.109
	Sig. (2-tailed)	<.001		.996	.346
	N	76		76	76
APRI	Pearson Correlation	.162	.609	-.457**	
	Sig. (2-tailed)	.162	0.02	<.001	
	N	76	76	76	
**. Correlation is significant at the 0.01 level (2-tailed).					

In present study, liver stiffness (kpa) was significantly positively correlated with the varices grading (r=0.514, p<0.001) which means as the liver stiffness increases varices grading also increases. APRI was also significantly positively correlated (r=609, p=0.02) with liver stiffness that mean as the APRI increases liver stiffness also increases.

Figure -2

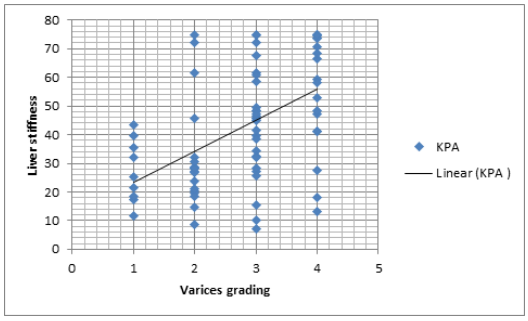
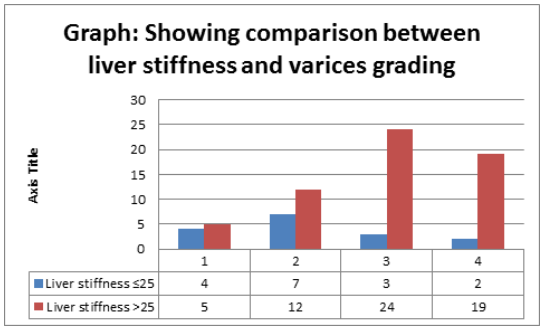


Table 5: Correlation KPA cut off 25 with Grading

Parameter		KPA		Total	Pearson Chi-Square	P value
		≤25	>25			
Grading of Varices	1	4	5	9	9.098	.028
	2	7	12	19		
	3	3	24	27		
	4	2	19	21		
Total		16	60	76		

When cut off of 25 was taken for liver stiffness, a significant difference was obtained among the different grades of varices. Which indicate that in patients with higher grading had liver stiffness >25 kpa (p=0.028).

Figure - 3



Discussion:-

With reference to the above statistical study our data showed that fibroscan score correlates well with the grading of Esophageal varices as screened on endoscopy. Several investigators in similar previous reports have suggested different cut-off fibroscan scores for the detection of esophageal varices in cirrhotic patients. [11, 12, 14], Castera et al[14] suggested a cut off value of 21.5 kPa for the prediction of grade 2-3 varices. In a similar report, Saad et al [12] suggested a cut off 29.7 kPa for the prediction of varices and a cut off of 38.2 kPa for the prediction of large varices. Kazemi et al [11] reported a lower cut off value of 19 for the detection of all varices. Moreover, Foucher et al [10] reported a cut off score of 27.5 kPa for the detection of varices and an NPV of 90% but with low sensitivity. These reports did not show definite cut off fibroscan score that can be used to predict Esophageal varices with a great level of surety. Castera et al [13] reviewed different cut off scores for the detection of liver cirrhosis of various etiologies ranging from 10.3 for CHB to 17.3 for chronic cholestatic liver disease. A study conducted by Mehmoud Hassan et. al. have indicated that due to lack of clearly defined values need of endoscopy cannot be deferred. In their study they also mentioned some correlation between the fibroscan score and severity of varices and they opined further study with a large number of similar patients to explore their findings.

In our study we have shown that liver stiffness was significantly correlated with the variceal grading (r=0.514 p<0.001) which

means as the liver stiffness score increases variceal grading also increases proportionately.

Castera et al [14] gave the hypothesis that fibroscan score and platelet count can be used together to predict the presence of varices. In addition to above findings during our studies we observed that APRI was also significantly positively correlated (r=0.609, p=0.02) with liver stiffness. It means there is a definite correlation between the biochemical parameter (APRI) and fibroscan score. Hence our study countenanced caster et al hypothesis.

The cause of liver disease was not identified in 15.8% of our patients, all these patients had negative viral marker and autoimmune profile no history of alcohol intake. Most of these patients may have had underlying, long standing NAFLD that has not diagnosed before cirrhosis developed. This supposition can be supported by the increasing burden of NAFLD in India.

Conclusion:-

Our data showed that fibroscan score can predict the presence of varices and there is significant association between fibroscan score and severity of varices.

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