



NON ENDOSCOPIC PARAMETERS OF OESOPHAGEAL VARICES AND VALIDATION OF EVENDO SCORE IN PATIENTS WITH CIRRHOSIS OF LIVER

Internal Medicine

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ABSTRACT

Background: Cirrhosis is a major cause of morbidity and mortality globally. Oesophageal varices (EV) are common complications with high risk of bleeding. Endoscopy is the gold standard for detection, but invasive. This study validates EVendo score, a non-invasive predictor of varices. **Methods:** A hospital-based prospective cross-sectional study was conducted at Navodaya Medical College, Raichur, on 100 cirrhotic patients aged 18–60 years. Demographic, clinical, biochemical, ultrasound, and endoscopic data were collected. EVendo and Child-Turcotte-Pugh (CTP) scores were calculated. Associations were tested using t-test and chi-square. **Results:** Mean age was 48.2 ± 5.4 years; 79% were males. Alcohol was the leading etiology (72%). Oesophageal varices were found in 50% of subjects. Those with varices had lower haemoglobin, platelet count, albumin, and higher bilirubin, INR, PT, and BUN. Mean CTP (8.52 vs 6.52 , $p < 0.001$) and EVendo scores (4.91 vs 4.33 , $p = 0.006$) were significantly higher in variceal patients. EVendo > 3.9 showed sensitivity 76%, specificity 32%, PPV 52.8%, and NPV 57.1%. **Conclusion:** EVendo score is a sensitive non-invasive predictor of varices but lacks specificity. It may reduce unnecessary endoscopy in resource-limited settings, but cannot replace it.

KEYWORDS

Liver cirrhosis, EVendo score, CTP score, Oesophageal varices.

INTRODUCTION

Liver cirrhosis accounts for over 1 million deaths annually. Oesophageal varices are a life-threatening consequence, with a 1-year bleeding risk of 5–15%. Endoscopy, though reliable, is invasive and costly. The EVendo score, developed using machine learning, integrates routine lab parameters (Hb, platelets, INR, AST, BUN, ascites) and offers potential as a screening tool. This study aimed to validate EVendo score in Indian patients with cirrhosis.

MATERIALS AND METHODS

Study Design: Prospective cross-sectional study at Navodaya Medical College, Raichur (Jan 2022 – Jun 2023).

Sample Size: 100 cirrhotic patients (18–60 years), calculated using sensitivity-based formula.

Inclusion: Cirrhosis with portal hypertension.

Exclusion: HCC, pregnancy, hematological disorders, active GI bleed, prior prophylaxis/interventions.

Data Collection: Demographics, clinical exam, labs (CBC, LFT, RFT, INR), USG, and endoscopy.

Analysis: MS Excel & EPI software. Univariate analysis (mean $\pm$ SD, %), t-test/chi-square for associations, $p < 0.05$ significant.

RESULTS

Majority of patients were between 41–50 years (63%), followed by those > 51 years (32%), with only 5% < 40 years. This indicates cirrhosis is predominantly seen in middle-aged and older adults.

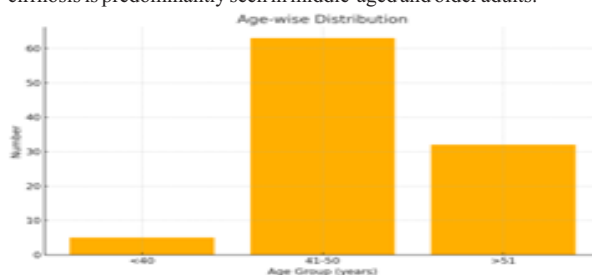


Figure 1: Age-wise Distribution

Table 1. Age-wise Distribution Of Patients

AGE GROUP	NUMBER	PERCENTAGE
< 40	5	5
41 – 50	63	63
> 51	32	32

Males constituted 79% and females 21%, showing a strong male predominance.

Table 2. Gender Distribution Of Patients

GENDER	NUMBER	PERCENTAGE
MALE	79	79
FEMALE	21	21



Figure 2: Gender Distribution

Alcohol-induced cirrhosis was the leading cause (72%), followed by Hepatitis B (14%), NAFLD (14%), and Hepatitis C (7%). This highlights alcohol as the dominant risk factor in this study population.

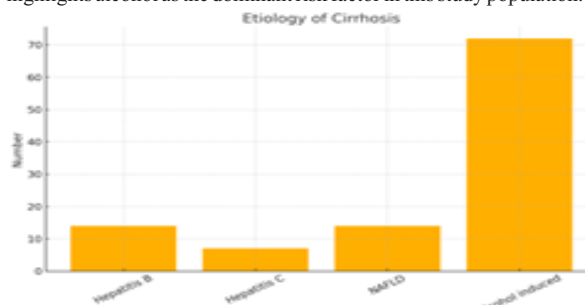


Figure 3: Etiology of Cirrhosis

Table 3. Etiology Of Cirrhosis

ETIOLOGY	NUMBER	PERCENTAGE
Hepatitis B	14	14
Hepatitis C	7	7
NAFLD	14	14
Alcohol induced	72	72

CTP Class B (46%) was most common, followed by Class A (34%), and Class C (20%). This suggests that nearly half the patients presented with moderate liver dysfunction.

Table 4. CTP Score Distribution

CLASS	NUMBER	PERCENTAGE
A(5 – 6)	34	34
B(7 – 9)	46	46
C(10 – 15)	20	20



Figure 4: CTP Score Distribution

72% had EVendo scores >3.90, while 28% had scores <3.90. A higher score suggests increased risk of esophageal varices, reflecting advanced disease in most patients.

Table 5. EVendo Score Distribution

SCORE	NUMBER	PERCENTAGE
<3.90	28	28
>3.90	72	72

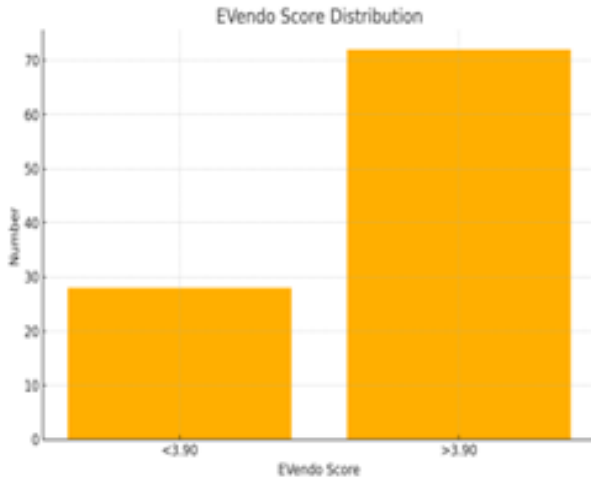


Figure 5: EVendo Score Distribution

The study demonstrates that alcohol is the predominant cause of cirrhosis, affecting mainly middle-aged males. Most patients were in Child-Pugh Class B, indicating moderate severity of liver disease, and a majority had elevated EVendo scores (>3.90), signifying a high risk for varices. These findings emphasize the need for early screening, lifestyle modifications, and preventive strategies-especially targeting alcohol-related liver disease.

Strengths: First study from this region validating EVendo score. Comprehensive data including clinical, biochemical, imaging, and endoscopic findings. Direct comparison of EVendo with CTP score. Limitations: Single-center study with modest sample size. Limited specificity of EVendo score. Findings may not generalize to viral hepatitis-predominant populations.

DISCUSSION

Our study confirms alcohol as the predominant etiology, differing from global data where viral hepatitis dominates. Half of the patients had oesophageal varices, similar to international studies. EVendo score showed moderate sensitivity but poor specificity, consistent with prior reports. Splenomegaly, low platelets, hypoalbuminemia, and elevated INR correlated significantly with varices. Compared to studies by Jan et al. (Pakistan) and Alswat et al. (Saudi Arabia), our population showed lower specificity, possibly due to etiology and disease stage differences. CTP and EVendo score both predicted varices, but EVendo score is simpler, using only laboratory parameters. Larger multicenter validations are needed.

CONCLUSION

EVendo score is a promising, simple, non-invasive tool to screen for oesophageal varices in cirrhosis. It reduces reliance on invasive endoscopy but cannot replace it. It is best used in combination with clinical assessment and imaging, especially in low-resource settings.

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