ORIGINAL RESEARCH PAPER

Gastroenterology

RISK FACTORS ASSOCIATED WITH BLEEDING AFTER PROPHYLACTIC ENDOSCOPIC VARICEAL BAND LIGATION IN LIVER CIRRHOSIS

KEY WORDS:

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ABSTRACT

Background- Prophylactic endoscopic variceal band ligation (EVL) is frequently perform in patients with liver cirrhosis. The aim of our study was to identify factors associated with early upper gastrointestinal bleeding in cirrhosis patients after prophylactic EVL. **Methods-** study done on 100 consecutive nonemergency patients with liver cirrhosis who required prophylactic EVL, in Madurai medical college. These patients were followed up for 1 month and observed for any early UGI bleed within 30 days of EVL. **Results-** Within 30 days after EVL 12 UGI bleed were observed. Increased serum bilirubin level, low platelet count and higher MELD and Child score were independently associated with UGI bleed following EVL with statistically significant p value ($p < 0.05$). There was no statistically significant association between grade of varices, presence of red colour sign or increased prothrombin time and UDI bleed. No significant difference in sex, age or cirrhosis etiology was observed between patients with or without post EVL UGI bleed. **Conclusion-** EVL is a safe procedure and early post EVL bleed is rare. Serum bilirubin, platelet count, MELD score and Child class are associated with early UGI bleed after EVL. Grade of esophageal varices, red colour sign and prothrombin time are not associated with UGI bleed after EVL.

Introduction-

Bleeding from esophageal varices is a life threatening complication resulting from portal hypertension in liver cirrhosis. Esophageal varices are present in 40%-60% of cirrhosis patients and annual incidence of first variceal bleed is estimated to be 4%. Edoscopic variceal band ligation with or without nonselective beta blocker therapy is a central element of primary and secondary bleeding prophylaxis in patients with medium and large esophageal varices and has been shown to be effective in reducing bleeding complications.

Yet, an important potential complication of EVL is procedure related bleeding, which has been described in 4%-10% of cirrhosis patients undergoing EVL. However risk factors for bleeding complication in patients receiving EVL are not well established.

The aim of this study was to determine factors associated with upper gastrointestinal bleeding in cirrhosis patients within 30 days after prophylactic EVL

METHODS

A total of 100 prophylactic nonemergency EVL procedures performed in an inpatient setting were followed up and studied at Madurai medical college between 07/2020 and 01/2022. Only patients with liver cirrhosis were eligible for inclusion in the study.

The couse of liver disease was documented in all patients, and severity of liver disease was assessed by MELD score and Child status of patients. Finding during endoscopy (size of varices and red spots) were also evaluated. Platelet count , INR, and serum bilirubin were defined as mandatory variables in the preinterventional assessment and were documented .

These patients were followed up for 1 month and observed for any early UGI bleed post EVL. This interventional study was approved by the ethics committee of Madurai medical college. Informed consent were obtained from each patients.

Definitions

Prophylactic EVL was defined as nonemergency EVL for purpose of prophylaxis of variceal bleeding in cirrhosis patients without active bleeding at the time of endoscopy.

Presence of liver cirrhosis was defined by characteristic clinical, laboratory and radiological findings.

Esophageal varices were graded according to parquets classification.

Early UGI bleed following EVL was defined as presence of hematemesis and/or melena and/or firm clinical or laboratory evidence of acute blood loss from the upper GI tract, which occurred within 30 days from EVL.

Statistics

Data are presented as median and interquartile range, or numbers and percentage, respectively. Comparisons between groups were performed using chi-squared test, Fisher's exact test, or Mann-Whitney U test, as appropriate. Spearman rank correlation was used to assess correlation between metric variables. To avoid overfitting in the multivariate analysis, a stepwise variable selection procedure (with iteration between forward and backward steps) was applied. As all the analyses were considered exploratory, no correction for multiple testing was performed and P values of <0.05 were considered statistically significant. All analysis was performed using SPSS version 16 (SPSS Inc., Chicago, IL). Bivariate Logistic regression analysis was used to assess predictability of risk factors associated with post bleeding after prophylactic endoscopicvariceal ligation in cihorrsis

		no bleeding within 30 days		bleeding within 30 days		P value
sexf	Male	60	68.81%	10	83.33%	0.659
	Female	28	31.18%	2	16.66%	
Child Class	A	14	15.90%	0		
	B	68	77.27%	2	16.66%	0.001*

	C	6	6.81%	10	83.33%	
Size of varices	Gr 2,3 col	20	22.72%	0		
	Gr2, 4 col	40	45.45%	2	16.66%	0.178
	Gr 3,3 col	4	4.54%	1	8.33%	
	Gr3,4 col	24	27.27%	9	75.00%	
Redcol oursig nf	absent	28	31.81%	4	33.33%	1
	present	60	68.18%	8	66.66%	

Chi Square Test; fFishers exact test ;*shows (P<0.05)

	no bleeding within 30 days		bleeding within 30 days		
	Median	IQR	Median	IQR	p value
Age	46	60	44	17	0.705
Plateletcount	82000	261998.9	33000	24000	0.001*
INR	1.4	1.79	1.9	1.6	0.084
Serumbilirubin	1.6	7.4	6.7	20	0.001*
MELD score	14	18	22	16	0.005*

Mann whitney U test ;(* p< 0.05 shows statistically significant)

Results

Patients

In total, 100 prophylactic EVL procedures performed. The median age at time of EVL was 45 years and approximately 70% of procedures were performed in male patients. Alcoholic and viral etiology accounted for more than 80% of procedures. The median number of ligation applied during one session was two. Overall 1 patients (1% of all EVL) died during follow up, with main cause of death being acute on chronic liver failure and infections

Early UGI bleed after EVBL

During the 30 day follow up period, 12 UGI bleed events (12% of all EVL) were observed at median of 13 days (IQR 8-17) following EVL. Only 1 case of procedure related bleeding were observed within 24 hours after EVL (8.3% of all UGI bleed events), which occurred due to accidental removal of the ligation band. In 11 patients ligation ulcer and/or esophageal varices were identified as the source of bleeding. Out of 12, 10 patients had minor UGI bleed and 2 had modrate to severe UGI bleed.

Factors associated with early UGI bleed after EVBL

Increased serum bilirubin level, low platelet count and higher MELD and Child score were independently associated with UGI bleed following EVL with statistically significant p value ($p < 0.05$). There was no statistically significant association between grade of varices, presence of red colour sign or increased prothrombin time and UDI bleed. No significant difference in sex, age or cirrhosis etiology was observed between patients with or without post EVL UGI bleed.

Discussion

The result of study suggest that MELD score, child status, serum bilirubin level and platelet count are associated with UGI bleed after EVL rather than size of varices, presence of red colour sign and changes in coagulation test results.

EVL is considered standard of care in cirrhosis patients with medium to large varices to reduce bleeding incidence from esophageal varices.

As changes in coagulation test results are common in advanced liver disease, it can be hypothesized that EVL related bleeding in cirrhosis patients may at least partly, be attributable to these coagulation disturbances. However our data do not support this hypothesis. The absolute difference in INR between patients who did and did not develop bleeding was clinically negligible.

Conclusion

Our data shows that EVBL is generally a safe procedure in patients with liver cirrhosis. Bleeding complication after EVL, observed in approximately 12% of procedure (10% patients had minor UGI bleed and 2% had modrate to severe UGI bleed). Risk of bleed mainly determined by severity of liver disease (Child class and MELD score), serum bilirubin level and platelet count.

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