



Research Article

NONINVASIVE PREDICTORS OF OESOPHAGEAL VARICES IN ALCOHOLIC CIRRHOSIS IN A TERTIARY CARE CENTRE

Vijai Shankar Chidambara Manivasagam*, Mohammed Ali., Pugazhendhi Thangavel

Department of Medical Gastroenterology, Government Rajiv Gandhi Hospital, Chennai, India

ARTICLE INFO

Article History:

Received 23rd January, 2018

Received in revised form 5th

February, 2018 Accepted 10th March, 2018

Published online 28th April, 2018

Key words:

Oesophageal varices, Lok score, APRI

ABSTRACT

Non-invasive predictors of varices in cirrhosis would reduce the need for screening endoscopies. Aim of this study is to assess the role of non invasive markers like platelet count-spleen diameter ratio, APRI (AST/platelet ratio index), AST/ALT ratio, Lok score, FIB4 score to predict oesophageal varices in alcoholic cirrhosis.

Method: 48 patients with alcoholic cirrhosis who came for index screening of varices were prospectively evaluated for non invasive markers using laboratory tests like platelet count, AST, ALT, INR, USG abdomen and were subjected for endoscopy for evaluation of varices. The diagnostic performances of the non invasive markers were assessed using sensitivity, specificity, positive predictive value and negative predictive value

Results: 48 patients with alcoholic cirrhosis with mean age of 46 years were included for the study. Majority belonged to Child C (22 patients, 46%) followed by Child B (14 Patients, 29%) and Child A (12 patients, 25%). AST/ALT ratio and FIB4 score have better sensitivity and positive predictive value for prediction of varices (80% & 84% and 80% & 84% respectively) than APRI, Lok score and platelet count-spleen diameter ratio (60% & 85%; 60% & 80%; 70% & 82%). Compared to their role in hepatitis C the non invasive markers are less specific (specificity in range of 25% and low negative predictive value around 12%) in alcoholic cirrhosis for predicting varices except for Lok score in predicting large varices (50% specificity).

Conclusion: Non invasive markers though sensitive are less specific in predicting oesophageal varices in alcoholic cirrhosis.

Copyright©2018 Vijai Shankar Chidambara Manivasagam et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

Oesophageal varices develop as a consequence of portal hypertension in patients with chronic liver disease and are present in approximately 50% of patients with cirrhosis of the liver. The grade of oesophageal varices often correlates with the severity of liver disease. While approximately 85% of individuals with Child-Pugh C cirrhosis have varices, they are present in only 45% those with Child-Pugh A cirrhosis.(1). The rate of development of new varices and increase in grades of varices is 8% per year; the former is largely predicted by a hepatic venous pressure gradient (HVPG) exceeding 10 mm Hg(2,3) and the latter by the presence of decompensated cirrhosis, alcohol etiology and red wale signs(3).

Large size varices, the presence of red color signs, severe liver disease and portal pressure greater than 12 mm Hg(4,5)

*Corresponding author: Vijai Shankar Chidambara Manivasagam

Department of Medical Gastroenterology, Government Rajiv Gandhi Hospital, Chennai, India

predict greater risk of bleeding. Mortality rate of an episode of oesophageal varices bleeding is approximately 20% at six weeks (6,7).

Predicting the grade of varices by non-invasive methods at the time of registration is likely to predict the need for prophylactic β blockers or endoscopic variceal ligation in patients with cirrhosis and portal hypertension. Non invasive predictor of varices were mainly evaluated in chronic viral hepatitis related cirrhotics but this study mainly evaluated its role in alcoholic cirrhotics since alcoholism is the main cause of cirrhosis now even in western countries.

MATERIALS AND METHODS

This is a prospective observational study, was carried out in Rajiv Gandhi Government General Hospital, Chennai, India from august 2013 to august 2014. 48 patients with alcoholic cirrhosis who came for index screening of varices evaluated for non invasive markers using laboratory tests like platelet count, AST, ALT, INR, USG abdomen and were subjected for

endoscopy for evaluation of varices. The diagnostic performances of the non invasive markers were assessed using sensitivity, specificity, positive predictive value and negative predictive value. Individuals who presented with variceal bleed, those with a past history of bleed and who had undergone sclerosis or band ligation of esophageal varices, portal vein thrombosis, hepatoma, or on current or past treatment with beta-adrenergic receptor blockers were excluded from the study. All alcoholic cirrhotics underwent detailed clinical evaluation, appropriate investigations, imaging studies (ultrasound with Doppler) and endoscopy at our centre. Diagnosis of alcoholic cirrhosis was based on clinical, biochemical and ultrasonographic findings and with significant alcohol intake of >60g for more than 8 years.

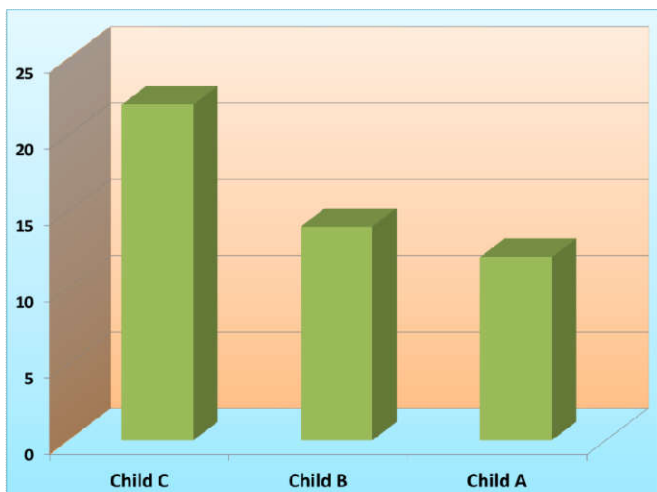
History included details and duration of alcoholism, jaundice, ascites, oliguria, pedal edema and gastrointestinal bleed. Presence or absence of jaundice, ascites, splenomegaly and hepatic encephalopathy was noted. Hemoglobin, platelet count, prothrombin time, blood urea, serum creatinine, blood glucose, liver function tests including serum bilirubin, albumin/globulin ratio and transaminases were estimated. Modified Child-Turcotte-Pugh (CTP) class was calculated for each patient. Non invasive markers like APRI (Cut off >1.4), AST/ALT ratio>1, FIB4 score (Cut off 2.8-presence of varices), FIB4 score (Cut off 3.3-presence of large varices), Lok score cut off 0.63 (presence of varices), Lok score cut off 0.7 (presence of large varices), Platelet spleen diameter ratio: cut off 6.09 were assessed and their correlation with presence of varices were evaluated.

Statistical Analysis

Univariate analyses were done using the Mann-Whitney U-test for continuous variables and the χ^2 test for categorical variables. A P value of less than 0.05 was considered as significant. The diagnostic performances of the non invasive markers were assessed using sensitivity, specificity, positive predictive value and negative predictive value. All analyses were carried out using the SPSS statistical package, version 15.00.

RESULTS

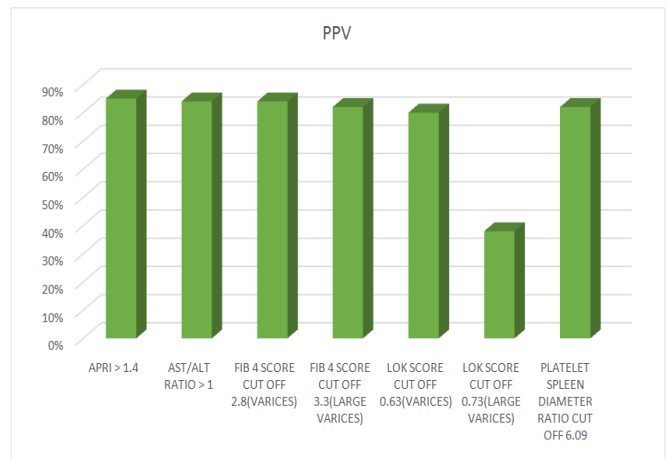
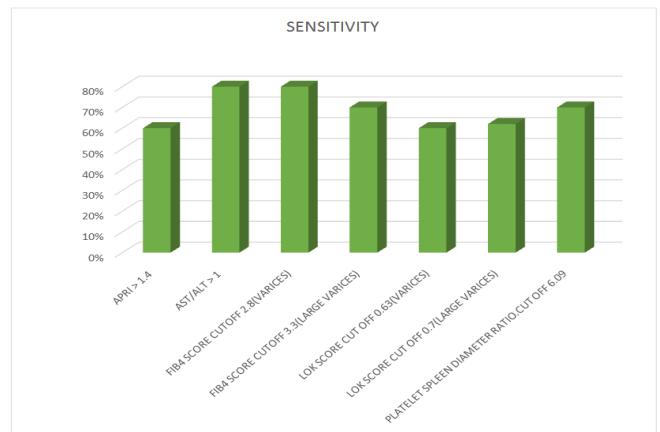
48 patients with alcoholic cirrhosis with mean age of 46 years were included for the study. Majority belonged to Child C (22 patients, 46%) followed by Child B (14 Patients, 29%) and Child A (12 patients, 25%).



Non invasive markers for prediction of oesophageal varices in alcoholic cirrhosis

Non invasive markers	Sensitivity	Specificity	Positive predictive value	Negative predictive value
APRI >1.4	60%	50%	85%	20%
AST/ALT ratio >1	80%	25%	84%	20%
FIB4 score Cutoff 2.8(presence of varices)	80%	25%	84%	20%
FIB4 score Cutoff 3.3(presence of large varices)	70%	25%	82%	14%
Lok score cut off 0.63(presence of varices)	60%	25%	80%	11%
Lok score cut off 0.7 (presence of large varices)	62%	50%	38%	72%
Platelet spleen diameter ratio: cut off 6.09	70%	25%	82%	14%

Sensitivity and positive predictive value(PPV): AST/ALT ratio and FIB4 score have better sensitivity and positive predictive value for prediction of varices (80% & 84% and 80% & 84% respectively) than APRI, Lokscore and platelet count-spleen diameter ratio (60%& 85%; 60% & 80%; 70% & 82%).



Specificity and negative predictive value(NPV): Compared to their role in hepatitis C the non invasive markers are less specific (specificity in range of 25%) and low negative predictive value (around 12%) in alcoholic cirrhosis for predicting varices except for Lok score in predicting large varices (50% specificity).



DISCUSSION

Several studies in the past have shown independent parameters like splenomegaly, (8,9,10,11,12) ascites,(11,13)spider naevi,(14), Child’s grade, (15) platelet count, (15,16,17) prothrombin time/activity(17), portal vein diameter(17) platelet count/ spleen diameter ratio, (18,19) serum albumin, (20) and serum bilirubin (20) as significant predictors for the presence of esophageal varices.

APRI score can be a useful non-invasive alternative for the exclusion and inclusion of significant liver fibrosis, as well as for the exclusion of cirrhosis. At a threshold value of ≤ 0.3 it rules out significant fibrosis, at a value of ≤ 0.5 it rules out cirrhosis, and at a threshold of ≥ 1.5 it rules in significant fibrosis. APRI values higher than 1.64 were correlated with the presence of oesophageal varices, maybe because they indicate more severe hepatic parenchyma architectural distortion (represented by fibrosis and sinusoidalcapillarization) and increased intrahepatic circulatory resistance, resulting in portal hypertension. Sebastiani *et al.*(21) found a weak correlation between APRI and the presence of any oesophageal varices (APRI=1.4; sensitivity 54%; specificity: 69%) and large varices (APRI=1.5; sensitivity 54%; specificity: 63%). Similar to this study in our study also APRI >1.4 had sensitivity of 60% and specificity of 50% and low negative predictive value (20%) in predicting varices.

Giannini *et al.*, (18) proposed the platelet count-spleen diameter ratio of ≤ 909 , as an accurate non-invasive marker for the presence of esophageal varices. Sen *et al.*, found the platelet count-spleen diameter ratio of ≤ 650 as a sensitive non-invasive marker [Area under curve (AUC) of 0.81] in HCV related cirrhosis. In our study Platelet spleen diameter ratio: cut off 6.09 had sensitivity of 70% and low specificity of 25% and low negative predictive value of 14% for prediction of varices.

HoriaStefanescu *et al* (22) in their prospectivestudy with the Lok score cutoff value of 0.62 they obtained 77.2% PPVfor the presence of oesophageal varices and an acceptable AUROC of 0.69. In the case of large oesopahgeal varices, the best cutoff value was 0.8, with anAUROC of 0.731 and a NPV of 86.4%. In our study Lok score cut off 0.63 indicative of presence of varices had sensitivity of 60% but had a low specificity of 25% and a low negative predictive value of 11%. Compared to other non invasive markers Lok score cut off 0.7 for presence of large varices had better negative predictive value of 72%.

CONCLUSION

Noninvasive markers though sensitive are less specific in predictingoesophageal varices in alcoholic cirrhosis.

Bibliography

1. Pagliaro L, D’Amico G, Pasta L, Politi F, Vizzini G, Traina M, *et al.* Portal hypertension in cirrhosis: Natural history. In: Bosch J, Groszmann RJ, editors. Portal Hypertension. Pathophysiology and Treatment. Oxford: Blackwell Scientific; 1994. pp. 72-92.
2. Groszmann RJ, Garcia-Tsao G, Bosch J, Grace ND, Burroughs AK, Planas R, *et al.* Beta-blockers to prevent gastroesophageal varices in patients with cirrhosis. *N Engl J Med.* 2005;353:2254-61.[PubMed]
3. Merli M, Nicolini G, Angeloni S, Rinaldi V, De Santis A, Merkel C, *et al.* Incidence and natural history of small esophageal varices in cirrhotic patients. *J Hepatol.* 2003; 38:266-72. [PubMed]
4. The North Italian Endoscopic Club for the Study and Treatment of Esophageal Varices. Prediction of the first variceal hemorrhage in patients with cirrhosis of the liver and esophageal varices. *N Engl J Med.* 1988; 319:983-9. [PubMed]
5. Armonis A, Patch D, Burroughs AK. Hepatic venous pressure measurement: An old test as new prognostic marker in cirrhosis? *Hepatology.* 1997; 25:245, 8. [PubMed]
6. D’Amico G, De Franchis R. Upper digestive bleeding in cirrhosis. Post-therapeutic outcome and prognostic indicators. *Hepatology.* 2003; 38:599-612. [PubMed]
7. Carbonell N, Pauwels A, Serfaty L, Fourdon O, Levy VG, Poupon R. Improved survival after variceal bleeding in patients with cirrhosis over the past two decades. *Hepatology.* 2004; 40:652-9. [PubMed]
8. Amarapurkar DN, Parikh SS, Shankaran K, Chopra K, Dhawan P, Kalro RH, *et al.* Correlation between splenomegaly and oesophageal varices in patients with liver cirrhosis. *Endoscopy.* 1994;26:563.[PubMed]
9. Chalasani N, Imperiale TF, Ismail A, Sood G, Carey M, Wilcox CM, *et al.* Predictors of large esophageal varices in patients with cirrhosis. *Am J Gastroenterol.* 1999; 94:3285-91. [PubMed]
10. Madhotra R, Mulcahy HE, Willner I, Reuben A. Prediction of esophageal varices in patients with cirrhosis. *J ClinGastroenterol.* 2002; 34:81-5. [PubMed]
11. Thomopoulos KC, Labropoulou-Karatza C, Mimidis KP, Katsakoulis EC, Iconomou G, Nikolopoulou VN. Non-invasive predictors of the presence of large oesophageal varices in patients with cirrhosis. *Dig Liver Dis.* 2003; 35:473-8. [PubMed]

12. Sharma SK, Aggarwal R. Prediction of large esophageal varices in patients with cirrhosis of the liver using clinical, laboratory and imaging parameters. *J GastroenterolHepatol.* 2007;22:1909-15. [PubMed]
13. Ng FH, Wong SY, Loo CK, Lam KM, Lai CW, Cheng CS. Prediction of oesophagogastric varices in patients with liver cirrhosis. *J Gastroenterol Hepatol.* 1999; 14:785-90. [PubMed]
14. Pilette C, Oberti F, Aube C, Rousselet MC, Bedossa P, Gallois Y. Non-invasive diagnosis of esophageal varices in chronic liver diseases. *J Hepatol.* 1999; 31:867-73. [PubMed]
15. Zaman A, Becker T, Lapidus J, Benner K. Risk factors for the presence of varices in cirrhotic patients without a history of variceal hemorrhage. *Arch Intern Med.* 2001; 161:2564-70. [PubMed]
16. Chalasani N, Imperiale TF, Ismail A, Sood G, Carey M, Wilcox CM, *et al.* Predictors of large esophageal varices in patients with cirrhosis. *Am J Gastroenterol.* 1999; 94:3285-91. [PubMed]
17. Schepis F, Camma C, Niceforo D, Magnano A, Pallio S, Cinquegrani M, *et al.* Which patients with cirrhosis should undergo endoscopic screening for esophageal varices detection? *Hepatology.* 2001; 33:333-8. [PubMed]
18. Giannini E, Botta F, Borro P, Risso D, Romagnoli P, Fasoli A, *et al.* Platelet count/spleen diameter ratio: Proposal and validation of a non-invasive parameter to predict the presence of oesophageal varices in patients with liver cirrhosis. *Gut.* 2003; 52:1200-5. [PMC free article] [PubMed]
19. Giannini E, Zaman A, Kreil A, Floreani A, Dulbecco P, Testa E, *et al.* Platelet count/spleen diameter ratio for the noninvasive diagnosis of esophageal varices: Results of a multicenter, prospective, validation study. *Am J Gastroenterol.* 2006; 101:251-9. [PubMed]
20. Bressler B, Pinto R, El-Ashry D, Heathcote EJ. Which patients with primary biliary cirrhosis or primary sclerosing cholangitis should undergo endoscopic screening for oesophageal varices detection. *Gut.* 2005; 54:407-10. [PMC free article] [PubMed]
21. Sebastiani G, Tempesta D, Fattovich G, Castera L, Halfon P, Bourliere M, *et al.* Prediction of oesophageal varices in hepatic cirrhosis by simple serum non-invasive markers: results of a multicenter, large-scale study. *J Hepatol* 2010; 53:630-638.
22. Horia Stefanescu^{1,2}, Mircea Grigorescu¹, Monica Lupsor², Anca Maniu², Dana Crisan¹, Bogdan Procopet¹, Diana Feier², Radu Badea². A New and Simple Algorithm for the Noninvasive Assessment of Esophageal Varices in Cirrhotic Patients Using Serum Fibrosis Markers and Transient Elastography. *J Gastrointest Liver Dis*; March 2011 Vol. 20 No 1, 57-64

How to cite this article:

Vijai Shankar Chidambaram Manivasagam *et al* (2018) 'Noninvasive Predictors of Oesophageal varices In Alcoholic Cirrhosis in A Tertiary Care Centre', *International Journal of Current Advanced Research*, 07(4), pp. 12052-12055.
DOI: <http://dx.doi.org/10.24327/ijcar.2018.12055.2111>
