



ORIGINAL ARTICLE

Relation of different grades of esophageal varices on endoscopy with Child-Pugh classes in cirrhotic patients diagnosed on USG in Tertiary Care Hospital Sargodha.

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Article Citation: Tarique M, Balooch S, Ahad W, Amin U, Hammad M, Jabeen S. Relation of different grades of esophageal varices on endoscopy with Child-Pugh classes in cirrhotic patients diagnosed on USG in Tertiary Care Hospital Sargodha. Professional Med J 2024; 31(10):1473-1477. <https://doi.org/10.29309/TPMJ/2024.31.10.8230>

ABSTRACT... Objective: To assess the relation of grades of esophageal varices with the scoring of Child-Pugh in patients of CLD on Ultrasonography. **Study Design:** Cross Sectional Study. **Setting:** Tertiary Care Hospital Sargodha. **Period:** January 2022 to January 2023. **Methods:** For this purpose, retrospective study was conducted that included reports from 40 patients of Tertiary Care Hospital Sargodha who underwent endoscopy for esophageal varices and ultrasonography for liver fibrosis after approval from Institutional Ethical Committee. **Results:** It was found that grades of esophageal varices are related with Child-Pugh classes. **Conclusion:** Thus, Child-Pugh is an effective way of predicting degree of esophageal varices and in time prophylactic therapy can decrease morbidity and mortality.

Key words: Child-Pugh, Esophageal Varices, Endoscopy, Ultrasound.

INTRODUCTION

Cirrhosis can be defined as histological progression of regenerative nodules encircled by fibrous bands. It can lead to portal hypertension, which develops due to enhanced splanchnic blood flow as a result of vasodilation in splanchnic vascular bed and enhanced resistance to blood in liver.¹ The varices are formed during an attempt of decompressing portal venous system. Resultantly, the variceal bleed may occur leading towards mortality and morbidity of the disease. It may start as small varices but end as large varices with annual conversion rate of 10%.² Risk of bleeding in small and large varices are 5% and 15% respectively. Previous study has shown 20% mortality rate associated with variceal bleeding.³ These figures make it important to diagnose varices on early basis in order to prevent the liver associated mortality and morbidity.⁴ Endoscopic band ligation (EBL) is the treatment used for acute variceal bleeding.⁵

Liver disease severity can be assessed with the help of liver biopsy. Moreover, upper gastrointestinal

endoscopy is considered as a gold standard for screening of patients. Despite this fact, it is extremely costly, which imparts burden on patients and endoscopy units. Therefore, in recent times interest has been diverted towards non-invasive methods.⁶ The reliability of such interventions has also increased their use. Most important method is liver elastography. Different models are also used for stratification of cirrhotic patients such as Child-Pugh classification (CPC)³, AST/platelet ratio (APRI), albumin-bilirubin score (ALBI), Hepa score model and model for end-stage liver disease (MELD). Such models are very useful in countries where accessibility and affordability of endoscopy and non-invasive nature of biopsy is a significant problem.⁷ The prognostic value of ALBI and CPC is comparable. ALBI is beneficial in assessing liver function and MELD is useful in predicting mortality of patients requiring liver transplantation. The use of CPC is mainly of evaluating severity of liver dysfunction in clinical work. The work of Gomaa et al⁸ has documented 96.7% sensitivity and 100% specificity with ALBI, 93.3% sensitivity and 100% specificity with CPC,

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Article received on: 02/05/2024
Accepted for publication: 06/07/2024

90% sensitivity and 95% specificity with MELD.

CPC was initially formulated by Child and Turcotte to forecast operative risk in individuals proceeding for portosystemic shunt surgery for variceal bleeding. However, it was later amended with addition of prothrombin time and removal of nutritional status. CPC is now used as a common means to stratify risk among cirrhotic patients. The scoring of CPC refers to increased worsening of liver condition. Moreover, it also indicates developing complications of the liver.⁹ The mortality of variceal bleeding ranges from 30% to 50% as a result of Child-Pugh grade and associated co-morbidities. CPC categorizes patients as A, B and C. A indicates well-compensated form with score of 5 or 6, B depicts functional disruption with score of 7 to 9, and C represents decompensated cirrhosis with score more than 10. Literature records a prevalence of 42.7% for A, 70.7% for B and 75.5% for C category. Thus, the present article is aimed to study Child-Pugh scoring in association with the cirrhosis severity as a result of esophageal varices.

METHODS

This retrospective cross sectional study was conducted at Tertiary Care Hospital Sargodha from January 2022 to January 2023, after approval from Institutional Ethical Committee approval vide Letter no. 308/3/1/Trg dated 06 February 2024. For this purpose, reports of patients who visited hospital with liver cirrhosis were collected. The inclusion criteria were that patients having age from 20 to 75 years, belonging to any gender, and diagnosed with liver disease. In case of history of surgery for portal hypertension, medication use for variceal bleeding, endoscopic variceal sclerotherapy, band ligation and trans jugular intra hepatic portosystemic shunt the patients were excluded from the study. 40 patients were made part of the study on this basis. The participants were briefed about purpose and importance of the study. After which, informed consents were collected from the patients.

The grades of esophageal varices were classified on endoscopy, whereas, Child-Pugh classes were assigned through clinical findings, ultrasound

and labs. CPC categorizes patients as A, B and C. A indicates well-compensated form with score of 5 or 6, B depicts functional disruption with score of 7 to 9, and C represents decompensated cirrhosis with score more than 10. Apart from this, demographic characteristics of age and gender were also recorded. Endoscopic classification of varices was used according to Paquet grading system, which ranges from grade 1 to 4. The grades 1 and 2 are considered as small varices, whereas, grade 3 and 4 are regarded as large varices. The grade 1 depicted small varices that are flattened by insufflation of air. Grade 2 presented moderately sized varices that are slightly larger than the previous grade and not flattened. Grade 3 are large varices that do not touch one another at mid of lumen. The grade 4 indicated very large varices that touch one another at mid of lumen.¹⁰

The statistical analysis of the collected data was performed on SPSS. Version 27 Chi square test was used to assess the relation between the Child-Pugh and grades of esophageal varices with p value of less than 0.05 as significant.

RESULTS

The demographics of the patients have been shown in the Table-I. The age range of the patients was 20-75 years with mean age of 48.03 ± 13.41 years. There were 22 (55%) male individuals and 18 (45%) female participants in the study. 34 (85%) patients were suffering from CLD and 6 (15%) were suffering from DCLD. In total, 35 (87.5%) were suffering from hepatitis C, whereas, 5 (12.5%) were patients of hepatitis B.

Characteristics	Frequency (Percentage)
Age (years) mean \pm SD	48.03 \pm 13.41
Gender n (%)	
Male	22 (55%)
Female	18 (45%)
CLD n (%)	34 (85%)
DCLD n (%)	6 (15%)
Hepatitis B n (%)	5 (12.5%)
Hepatitis C n (%)	35 (87.5%)

Table-I. Demographics of patients

The relationship of grades of varices and Child-Pugh has been shown in the Table-II. It can be noted that 32 (80%) patients belonged to grade

1 and Child-Pugh A. There were 6 (15%) patients with grade 2 and Child-Pugh B. There were 1 (2.5%) patient with grade 3 and 4 having Child-Pugh C. The relationship between grades of varices and Child-Pugh is statistically significant.

Grades of Varices	Child-Pugh			Total n (%)	Chi square
	A	B	C		
1	32	0	0	32 (80%)	0.000
2	0	6	0	6 (15%)	
3	0	0	1	1 (2.5%)	
4	0	0	1	1 (2.5%)	
Total n (%)	32 (80%)	6 (15%)	2 (5%)	40 (100%)	

Table-II. Relationship of grades of varices and Child-Pugh

DISCUSSION

Liver cirrhosis is an important cause of morbidity and mortality all over the world. It ranked as eleventh leading cause of death and fifteenth leading cause of illness in year 2016.¹¹ This accounted for 2.2% deaths and 1.5% disability years across the world. In 2015, CLD accounted for 20.7 per 100000 individuals. In the same year, incidence in Southeast Asia was recorded to be 23.6 per 100000 individuals.⁸ Alcohol and chronic viral infection have been referred in previous studies as reasons for increased prevalence of the disease. Other important causes for CLD have been documented as NFLD, hepatitis B, hepatitis C and alcohol. Presently, the epidemiology of CLD has been reshaped due to factors such as vaccination campaigns and improved HCV treatment. On the other hand, issues of obesity and metabolic syndrome tend to increase prevalence of the disease. Thus, it is important to understand and address the underlying factors of increase in the disease prevalence.

In present research work, the mean age of patients was 48.03 ± 13.41 years. This is in accordance with the work of Tiwari et al¹², who found the mean age of 48.5 ± 11.1 years among liver cirrhosis patients. In the study of Girish and Shrestha¹³, the mean age of patients was 48 ± 9.66 years. Highly effected age group involved was 41-50 years ($n=23$; 85%). The study of Shrestha et al¹⁴ indicated mean age of 50 ± 12 years with most

effected age group being 40 to 60 years ($n=69$; 71.1%). The mean age in the study of Kumar et al¹⁵ was 53.40 ± 6.2 years.

It was found that men are in majority of 22 (55%), whereas women were 18 (45%). Tiwari et al¹¹ found men in majority of 294 (72.4%) as compared to 112 (27.6%) females, which is quite greater than the present study. In study of Shrestha et al¹⁴ indicated male population in majority ($n=81$; 83.5%), whereas, there were 16 (16.5%) females. Kumar et al¹⁵ found the disease in 24% females and 76% males. This indicates that the disease is found more in male population, which is in accordance with the findings of present study.

Various developments have changed the epidemiology of liver cirrhosis. Obesity, vaccinations, metabolic syndromes and hepatitis C treatment are important attributes. The precise diagnosis of liver cirrhosis is a difficult thing, which makes it compulsory to understand its related risk factors such as hepatitis B and C. Literature indicates that alcohol and viral infections are major reason of CLD. However, hepatitis B and C has also been also reported in cases of liver cirrhosis. This is true for the present study as well. Hepatitis B was present in 5 (12.5%) individuals, whereas, 35 (87.5%) patients had hepatitis C. On the other hand, CLD was evident in 34 (85%) patients and DCLD was present in 6 (15%) patients. Tiwari et al¹² found 29% hepatitis B and 9% hepatitis C among patients of liver cirrhosis. In the work of Girish et al¹³, hepatitis was present in 10% cases and hepatitis was present in 1.3% patients. The work of Shrestha et al¹⁴ indicated 7.2% cases of hepatitis B and 1% cases of hepatitis C. Kumr et al (2020) found hepatitis B in 18% patients and hepatitis C in 10% patients.

It can be noted that 32 (80%) patients belonged to grade 1 and Child-Pugh A. There were 6 (15%) patients with grade 2 and Child-Pugh B. There were 1 (2.5%) patient with grade 3 and 4 having Child-Pugh C. The study of Girish et al¹³ indicated that 25% of the patients were found in grade 1 and Child-Pugh A, followed by 14% patients in grade 2 and Child-Pugh B, 27% patients in category of grade 3 and Child-Pugh B, 34% patients in grade

4 and Child-Pugh C. The study further claimed that highest prevalence of cases was found in Child-Pugh C (58%). The work of Shrestha et al¹⁴ also found highest prevalence in Child-Pugh C (38.1%), whereas 30.9% cases were found in each category of Child-Pugh A and B. However, this is contradictory to the findings of present study in which highest prevalence was affiliated with Child-Pugh A (80%).

The most important finding of the present study was that higher grades of varices are correlated with greater degree of Child-Pugh. This relationship was found to be statistically significant. The same was claimed by Tiwari et al¹², Ashraf and El-Sayed¹⁰, Chalasani et al¹⁶, Gomaa et al⁸ and Shrestha et al.¹⁴ In study of Shrestha¹⁴, it was noted that Child-Pugh classes of B and C have large varices with sign of red color that indicates chances of bleeding. Ashraf and El-Sayed¹⁰ indicated that higher CPC score were 1.364 times at more risk of esophageal varices.

CONCLUSION

It can be concluded that grades of varices are significantly related to degrees of Child-Pugh. The routine screening should be regulated in order to confirm the presence of varices and its Child-Pugh category. This will help in identification of large varices, which can further be useful in implementing prophylactic therapy. Thus, the chances of bleeding can be minimized resulting in deduction of mortality rate.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

SOURCE OF FUNDING

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.






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REFERENCES

- Ginès P, Krag A, Abrales JG, Solà E, Fabrellas N, Kamath PS. **Liver cirrhosis**. *The Lancet*. 2021 Oct 9; 398(10308):1359-76.
- Moon AM, Singal AG, Tapper EB. **Contemporary epidemiology of chronic liver disease and cirrhosis**. *Clinical Gastroenterology and Hepatology*. 2020 Nov 1; 18(12):2650-66.
- Amer G, Sayed M, Waleed M, Nabil H, Mohamed M. **Evaluation of ALBI, MELD and child-pugh scores as non-invasive predictors of esophageal varices**. *The Egyptian Journal of Hospital Medicine*. October 2018; 73(8):7358-64.
- Yoshiji H, Nagoshi S, Akahane T, Asaoka Y, Ueno Y, Ogawa K, et al. **Evidence-based clinical practice guidelines for liver cirrhosis 2020**. *Journal of Gastroenterology*. 2021 Jul; 56(7):593-19.
- Kok B, Abrales JG. **Child-Pugh classification: Time to abandon?** *In Seminars in Liver Disease*. 2019 Feb; 39(01)096-103. Thieme Medical Publishers.
- Mattos ÂZ, Schacher FC, Neto GJ, Mattos AA. **Screening for esophageal varices in cirrhotic patients—non-invasive methods**. *Annals of Hepatology*. 2019 Sep 1; 18(5):673-8.
- Setty BV, Raghav GN, Ameen SS. **A study of non-invasive predictors of esophageal varices in chronic liver disease**. *European Journal of Cardiovascular Medicine*. 2023 Jul 1; 13(3): .
- Gomaa AA, Mohammed SF, Mousa WM, Hasan NF, Mhdy MA. **Evaluation of ALBI, MELD and child-pugh scores as non-invasive predictors of esophageal varices**. *The Egyptian Journal of Hospital Medicine*. 2018 Oct 1; 73(8):7358-64.
- Tsoris A, Marlar CA. **Use of the Child Pugh score in liver disease. 2023**.
- Pugh RN, Murray Lyon IM, Dawson JL, Pietroni MC, Williams R. **Transection of the oesophagus for bleeding oesophageal varices**. *British Journal of Surgery*. 1973 Aug; 60(8):646-9.
- Ashraf DG, El-Sayed I. **Esophageal varices predictive score in liver cirrhosis**. *The Egyptian Journal of Internal Medicine*. 2018 Jun; 30:72-7.
- Tiwari PS, Thapa P, Karki B, Sudhamshu KC. **Correlation of Child-Pugh classification with esophageal varices in patients with liver cirrhosis**. *Journal of Nepalgunj Medical College*. 2022 Jul 31; 20(1):4-8.
- Girish A, Shrestha TM. **Child pugh score as a predictor of large oesophageal varices in chronic liver disease patients**. *Nepal Medical Journal*. 2020 Jun 21; 3(1):37-41.

14. Shrestha A, Khadka D, Shrestha R. **Correlation of grading of esophageal varices with Child Turcotte Pugh class in patients of liver cirrhosis.** Journal of Nepalgunj Medical College. 2018 Dec 31; 16(2):50-3.
15. Kumar P, Singh K, Joshi A, Thakur P, Mahto SK, Kumar B, Pasricha N, Patra BR, Lamba BM. **Evaluation of non-invasive marker of esophageal varices in cirrhosis of liver.** Journal of Family Medicine and Primary Care. 2020 Feb 1; 9(2):992-6.
16. Chalasani N, Imperiale TF, Ismail A, Sood G, Carey M, Wilcox MC, Madichetty H, Kwo PY, Boyer TD. **Predictors of large esophageal varices in patients with cirrhosis.** Official journal of the American College of Gastroenterology | ACG. 1999 Nov 1; 94(11):3285-91.

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