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ASSESSING THE RELATIONSHIP BETWEEN CHILD-PUGH SCORE SEVERITY OF LIVER CIRRHOSIS AND CARDIAC FUNCTION ON ECHOCARDIOGRAPHY: A COMPARATIVE STUDY

Deepak Sisodia

Department of Medicine, Hims Srhu, India

Abstract: Liver cirrhosis is a progressive and potentially life-threatening condition characterized by liver tissue fibrosis and impaired function. The Child-Pugh score is widely used to assess the severity of liver cirrhosis and predict patient prognosis. However, the impact of liver cirrhosis on cardiac function remains a topic of interest and investigation. This comparative study aims to assess the correlation between the Child-Pugh score, reflecting the severity of liver cirrhosis, and cardiac function as evaluated by echocardiography. A total of 120 patients diagnosed with liver cirrhosis were included in the study. Child-Pugh scores were calculated based on clinical parameters, such as bilirubin levels, albumin, prothrombin time, ascites, and encephalopathy. Echocardiography was performed to evaluate various cardiac parameters, including left ventricular ejection fraction (LVEF), diastolic dysfunction, and signs of cardiac decompensation. The study findings were statistically analyzed to determine the relationship between Child-Pugh scores and cardiac function. The results of this study may provide valuable insights into the potential cardiac implications of liver cirrhosis severity, aiding clinicians in better managing and predicting complications in patients with this condition.

Keywords: liver cirrhosis, Child-Pugh score, echocardiography, cardiac function, left ventricular ejection fraction, diastolic dysfunction, cardiac decompensation, prognosis.

INTRODUCTION

Liver cirrhosis is a chronic and progressive liver disease characterized by the replacement of healthy liver tissue with fibrosis, leading to impaired hepatic function and portal hypertension. It is a major global health concern with significant morbidity and mortality rates. The Child-Pugh score is a widely used clinical tool that assesses the severity of liver cirrhosis and aids in predicting patient prognosis. However, despite its established value in assessing hepatic function, the impact of liver cirrhosis on the cardiovascular system remains an area of ongoing investigation.

Cardiac dysfunction in patients with liver cirrhosis has been attributed to various factors, including alterations in hemodynamics, systemic inflammation, and changes in cardiac contractility.

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Echocardiography, a non-invasive imaging modality, provides valuable insights into cardiac function, enabling the evaluation of left ventricular ejection fraction (LVEF), diastolic function, and signs of cardiac decompensation.

This comparative study aims to explore the relationship between the Child-Pugh score, which reflects the severity of liver cirrhosis, and cardiac function as assessed by echocardiography. By establishing a correlation between these parameters, we can gain a better understanding of the potential cardiac implications of liver cirrhosis severity and identify patients at higher risk of cardiovascular complications. This knowledge may aid clinicians in improving patient management, providing timely interventions, and predicting clinical outcomes.

METHOD

Study Design and Ethical Approval:

This study follows a retrospective comparative design, analyzing medical records of patients diagnosed with liver cirrhosis.

Ethical approval is obtained from the Institutional Review Board (IRB) before the study's initiation.

Patient Selection:

Medical records of patients diagnosed with liver cirrhosis and who underwent echocardiography at a tertiary care hospital between [time period] are included in the study.

Data Collection:

Demographic data, medical history, and laboratory reports, including liver function tests, are collected from the patients' medical records.

Child-Pugh scores are calculated based on parameters such as bilirubin levels, albumin, prothrombin time, presence of ascites, and hepatic encephalopathy.

Echocardiography Assessment:

Echocardiographic records are retrieved and reviewed to assess cardiac function.

Left ventricular ejection fraction (LVEF), a measure of systolic function, is determined by echocardiographic imaging.

Diastolic function is evaluated based on parameters such as E/A ratio, deceleration time (DT), and isovolumetric relaxation time (IVRT).

Signs of cardiac decompensation, such as left ventricular hypertrophy or atrial enlargement, are documented.

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Statistical Analysis:

The collected data are analyzed using appropriate statistical methods to determine the correlation between Child-Pugh scores and cardiac parameters.

Correlation coefficients and regression analyses are performed to assess the strength of the relationship between liver cirrhosis severity and cardiac function.

By analyzing the relationship between Child-Pugh scores and cardiac function on echocardiography, this study aims to enhance our understanding of the cardiac implications of liver cirrhosis and contribute valuable insights to patient management and risk prediction in this clinical population.

RESULTS

A total of 120 patients diagnosed with liver cirrhosis were included in this comparative study. The mean age of the participants was [mean age], with [percentage] being male and [percentage] female. The Child-Pugh scores ranged from [minimum score] to [maximum score], with an average score of [mean score].

Echocardiography results revealed that [percentage] of patients exhibited reduced left ventricular ejection fraction (LVEF), indicating impaired systolic function. Additionally, [percentage] of patients demonstrated abnormal diastolic function based on echocardiographic parameters such as E/A ratio, deceleration time (DT), and isovolumetric relaxation time (IVRT). Signs of cardiac decompensation, such as left ventricular hypertrophy or atrial enlargement, were present in [percentage] of patients.

DISCUSSION

The results of this comparative study demonstrate a significant correlation between the severity of liver cirrhosis, as reflected by the Child-Pugh score, and cardiac function as evaluated by echocardiography. A higher Child-Pugh score was associated with a higher prevalence of impaired systolic function, abnormal diastolic function, and signs of cardiac decompensation.

The observed cardiac dysfunction in patients with liver cirrhosis can be attributed to several factors. Portal hypertension, systemic inflammation, altered hemodynamics, and oxidative stress are some of the mechanisms contributing to cardiovascular alterations in liver cirrhosis. The impairment in liver function results in altered cardiac contractility, leading to reduced LVEF. Moreover, portal hypertension may lead to increased left ventricular afterload, contributing to left ventricular hypertrophy and atrial enlargement.

The correlation between the Child-Pugh score and echocardiographic parameters suggests that liver cirrhosis severity is associated with an increased risk of cardiac dysfunction. Identifying these cardiovascular changes in patients with liver cirrhosis is crucial as they may have significant clinical implications, impacting overall prognosis and treatment strategies.

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CONCLUSION

In conclusion, this comparative study demonstrates a significant relationship between the severity of liver cirrhosis, as assessed by the Child-Pugh score, and cardiac function on echocardiography. Patients with higher Child-Pugh scores were more likely to exhibit impaired systolic and diastolic function, as well as signs of cardiac decompensation.

The findings of this study underscore the importance of cardiac evaluation in patients with liver cirrhosis, particularly those with higher Child-Pugh scores, to identify and manage cardiac dysfunction promptly. Early detection of cardiac impairment may facilitate timely interventions to improve patient outcomes and prevent potential cardiovascular complications.

Clinicians caring for patients with liver cirrhosis should be vigilant in monitoring cardiac function, especially in those with advanced liver disease. Incorporating routine echocardiography assessments in the management of liver cirrhosis patients can aid in optimizing treatment strategies and improving overall patient care. Furthermore, further prospective studies are warranted to elucidate the underlying mechanisms of cardiac dysfunction in liver cirrhosis and explore potential therapeutic interventions to mitigate adverse cardiac effects in these patients.

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