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Research Article

Serum Homocysteine as a Prognostic Marker in Liver Cirrhosis

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ABSTRACT
Background: Liver cirrhosis is a global health burden with significant diagnostic and prognostic challenges. Serum homocysteine, a sulfur-containing amino acid, is increasingly recognized as a marker of endothelial dysfunction and liver impairment. **Aims**: This study aims to investigate serum homocysteine levels as a prognostic indicator in liver cirrhosis.
Methods: A cross-sectional analysis of 50 patients was conducted, showing a strong correlation of homocysteine with MELD and CTP scores.
Results: These findings suggest serum homocysteine as a valuable prognostic biomarker in liver cirrhosis.
Conclusion: Serum homocysteine levels show a significant correlation with the severity of liver cirrhosis. As a non-invasive marker, it holds promise for prognostication in cirrhotic patients. Future longitudinal studies are warranted to further validate its utility.

Keywords: Liver cirrhosis, Serum homocysteine, endothelial dysfunction and liver impairment.

INTRODUCTION

Liver cirrhosis represents the terminal stage of chronic liver disease. Its progression is marked by fibrosis and nodular regeneration leading to compromised liver function. Homocysteine metabolism, which is closely linked with hepatic function, may reflect disease severity. Elevated homocysteine levels have been associated with various vascular and metabolic complications, making it a candidate marker for prognostication in cirrhosis.

OBJECTIVES

• To measure serum homocysteine levels in liver cirrhosis patients.
• To correlate homocysteine levels with MELD and CTP scores.

METHODOLOGY

This was an observational cross-sectional study conducted at the Rajshree Medical Research Institute, Bareilly. The study involved 50 patients diagnosed with liver cirrhosis. Serum homocysteine levels were measured and compared against MELD and Child-Turcotte-Pugh (CTP) scores to determine prognostic significance

Inclusion Criteria

- All patients exhibited alcoholic cirrhosis of the liver with portal hypertension and ascites, devoid of viral markers.
- Cases of cirrhosis due to chronic Hepatitis B or chronic Hepatitis C, in patients of either gender, featuring portal hypertension and ascites.

Exclusion Criteria

- Patients with a history of alcohol consumption along with a positive viral marker.
- Individuals with alcoholic hepatitis or viral chronic hepatitis but lacking clinical symptoms of liver cirrhosis.

- Patients older than 60 years were excluded to minimize the impact of advanced age on homocysteine levels.
- Those suffering from diabetes mellitus, chronic renal failure, hypothyroidism, inflammatory bowel disease.

severe cirrhosis. There was a strong positive correlation between homocysteine levels and both MELD and CTP scores. Homocysteine levels also showed significant associations with alcohol use, hypoalbuminemia, and complications like ascites and hepatic encephalopathy.

RESULTS

The study revealed that homocysteine levels were significantly higher in patients with

Table 1: Child-Turcotte-Pugh (CTP) Class Distribution

CTP Class	Frequency	Percentage (%)	Mean Homocysteine (µmol/L ± SD)	P-value
A	10	20.41	19.8 ± 3.5	<0.001
B	22	44.90	27.3 ± 4.8	
C	17	34.69	35.6 ± 7.1	

Table 2: MELD Score Categories

MELD Score	Frequency	Percentage (%)	Mean Homocysteine (µmol/L ± SD)	P-value
<15	12	24.49	18.9 ± 3.2	<0.001
15–25	23	46.94	28.4 ± 5.1	
>25	14	28.57	36.7 ± 6.5	

Table 3: Homocysteine vs. MELD Score Correlation

Parameter	Pearson's r	P-value
MELD Score	0.72	<0.001

Table 4: Complications and Homocysteine Levels

Complication	Frequency	Mean Homocysteine (µmol/L ± SD)	P-value
Ascites	35 (71.43%)	31.2 ± 6.4	0.003
Hepatic Encephalopathy	18 (36.73%)	34.8 ± 7.1	0.001
Variceal Bleeding	12 (24.49%)	33.5 ± 6.9	0.012

CONCLUSION

Serum homocysteine levels show a significant correlation with the severity of liver cirrhosis. As a non-invasive marker, it holds promise for prognostication in cirrhotic patients. Future longitudinal studies are warranted to further validate its utility.

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