

SERUM CHOLINESTERASE AS A BIOMARKER OF LIVER CIRRHOSIS AND ITS CORRELATION WITH THE SEVERITY OF CIRRHOSIS

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ABSTRACT:

BACKGROUND:

Hepatic cirrhosis is a commonly encountered clinical entity. Its management includes an array of tests like serum albumin levels, PT INR, serum bilirubin, aminotransferases. Various classification systems have also been developed including the MELD and Child Pugh scores for assessing its severity and prognosis. Since the source of serum cholinesterase is the liver, it reflects hepatic function. Its values are not affected by albumin or fresh frozen plasma transfusions. Studies have shown that it shall help both in diagnosing liver cirrhosis and in the assessment of its severity and prognosis. Studies have shown that it shows good correlation with the routine liver function tests like serum albumin, PT INR, Child Pugh and MELD scores.

AIMS & OBJECTIVE:

To estimate the level of serum cholinesterase in patients with liver cirrhosis. To compare its level with other tests of liver function like serum albumin, bilirubin, PT INR. To assess the relation between serum cholinesterase levels and severity of liver cirrhosis by comparing with Child pugh and MELD scoring.

MATERIALS AND METHODS

SETTING: Department of General Medicine, Madurai medical college and Rajaji govt hospital. **DESIGN & DURATION OF STUDY:** hospital based prospective & observational study conducted during March 2018 – August 2018. **INCLUSION CRITERIA:** 100 patients with cirrhosis of liver diagnosed clinically and by ultrasonography. **EXCLUSION CRITERIA:** patients with organophosphate and carbamate poisoning, exposure to succinylcholine, morphine, cocaine and codeine, blood transfusion or albumin infusion 4 weeks prior to enrolment in the study, Liver transplanted individuals, Chronic malnutrition, Females having pregnancy or using OCPs, Acute infection, Nephrotic syndrome. Sampling method was purposive. history taking and clinical examination done after sample selection. The investigations done were liver function tests, ultrasonography abdomen, Complete blood count, Viral markers, Renal function tests, PT INR, Serum cholinesterase. The serum cholinesterase assay was done using propionylthiocholine as substrate, by the kinetic propionylthiocholine method. Ascites was detected clinically and by

ultrasonography. Hepatic encephalopathy was clinically graded. The correlation between serum cholinesterase levels and the variables studied were Serum albumin, Serum bilirubin, INR, Child Pugh score, MELD score.

RESULTS

Most cases of cirrhosis (32 patients) occur in the 41 – 50 years age group (32%). Among the 100 patients in our study, 85 patients (85%) were males and 15 patients (15%) were females. The most common cause of cirrhosis among the patients in our study was alcohol, seen in 72 patients (72%). In this study 85 patients (85%) presented with ascites, and among them 16 patients (16%) had severe (i.e. poorly controlled ascites) and 69 patients (69%) had mild – moderate ascites.

70 patients (70%) in our study presented with icterus while the remaining patients did not have icterus clinically. In this study, 44 patients (44%) presented with hepatic encephalopathy, of which 12 patients were in grade I (12%), 16 patients (16%) in grade II, 12 patients (12%) in grade III and 4 patients (4%) in grade IV. In our study, 68 patients (68%) had splenomegaly, as detected by ultrasonography.

In our study, 70 patients (70%) had bilirubin levels greater than 3 mg/dl, 16 patients (16%) had bilirubin levels between 2 to 3 mg/dl and 14 patients (14%) had bilirubin levels less than 2 mg/dl. 65 patients (65%) in our study had INR levels less than 1.7,

while 25 patients (25%) had values between 1.7 – 2.3 and 10 patients (10%) had values >2.3.

In our study, 41 patients (41%) had Albumin levels less than 3.5, 12 patients (12%) had values between 3-3.5 and 47 patients (47%) had values <3. In our study, 35 patients (35%) belonged to Child Pugh class B, 50 patients (50%) are under Child Pugh class C and 15 patients (15%) under Child Pugh class A. In our study, 65 patients (65%) had MELD score greater 15 and 35 patients (35%) had a MELD score less than or equal to 15.

Serum albumin levels were compared with serum cholinesterase levels and it was found that serum cholinesterase levels were lower in patients with the lower values of serum albumin in our study (positively correlated). Serum bilirubin levels were negatively correlated with the serum cholinesterase levels in our study. The INR value was negatively correlated with the serum cholinesterase levels in this study. In this study, it was found that serum cholinesterase values were higher among patients with Child Pugh class A than the class B patients, in whom the values of serum cholinesterase were higher than the class C group. The higher Child Pugh grading correlated negatively with the serum cholinesterase values. It was found that the MELD scores were inversely correlated with values of serum cholinesterase in our study. All the above correlations are statistically significant with p value <0.01.

CONCLUSION:

Liver cirrhosis was more commonly seen among middle aged adults (5 th decade) and is much more common in males. Alcohol is the most commonly observed etiology of cirrhosis. The most common presenting symptom was ascites, followed by icterus. Among patients with ascites, majority had mild to moderate ascites (medically controlled). Majority of patients in the study did not have hepatic encephalopathy. Among patients with hepatic encephalopathy, most patients had grade II hepatic encephalopathy. Majority of patients had splenomegaly, that was indicative of portal hypertension. Majority of patients had bilirubin levels more than 3 mg/dl. Most patients in the study did not have coagulopathy and had INR level <1.7. Majority of patients belonged to Child Pugh class C. Most patients had MELD score greater than 15. There was significant positive correlation between serum albumin and serum cholinesterase levels. Serum bilirubin, INR, CHILD PUGH scoring and MELD scoring negatively correlated with serum cholinesterase levels. Thus Significant correlation was found between serum cholinesterase values and the severity of liver cirrhosis. The levels were lower in patients with more severe liver disease.

KEYWORDS:

Cirrhosis, Serum cholinesterase, Albumin, Bilurubin, INR, MELD Score, Child Pugh score.