



STUDY OF SERUM PROLACTIN WITH CHILD-PUGH SCORING SYSTEM IN ASSESSMENT OF SEVERITY OF CIRRHOSIS OF LIVER

Gastroenterology

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KEYWORDS

INTRODUCTION:

Cirrhosis is a significant cause of morbidity and mortality globally and in India [1]. India contributed to 18.3% of the two million global liver disease deaths reported in 2015 [1]. In the last four decades, the burden of mortality due to liver cirrhosis is progressively increasing in India due to cultural lifestyle transitions, increased alcohol consumption, a fatty diet, and a lack of exercise [2]. Most common causes of cirrhosis are alcohol followed by NAFLD / cryptogenic cirrhosis and viral hepatitis.

Child Pugh score (CTP score) is a clinical tool to assess the prognosis of chronic liver disease (CLD), primarily cirrhosis helps guide treatment decision including liver transplant. It includes five clinical measures like bilirubin, albumin, INR, ascites and hepatic encephalopathy. However there is an ongoing interest in identifying additional biochemical markers that reflect disease severity and prognosis.

Prolactin, a pituitary hormone, is normally metabolised and cleared by the liver. In CLD, impaired hepatic clearance and dysregulation of hypothalamic – pituitary axis may lead to elevated serum prolactin levels.

Objectives:

1. To assess the serum prolactin levels in patients with chronic liver disease.
2. To evaluate the correlation between prolactin level and Child Pugh score.
3. To explore potential of serum prolactin as a marker of disease severity.

MATERIALS AND METHODS:

Patients attending Shri BM PATIL hospital during the period were included in the study.

This is a hospital based cross sectional study with a sample size of 90 patients.

Inclusion Criteria:

1. Patients aged >18 years with clinically, biochemically & radiologically (by Ultrasonography) proven cirrhosis of liver.

Exclusion Criteria:

1. Pregnant and lactating women.
2. Known case of thyroid disease, chronic kidney disease, prolactinoma.
3. Patients on medication known to alter prolactin levels.

The data is collected according to proforma in terms of detailed history, clinical examination and necessary investigations of the patients who fulfil the inclusion criteria.

Calculation of Child Pugh score for each patient as explained in the table 1

Table No.1

Parameter	1	2	3
Total bilirubin mg/dl	<2	2-3	>3
Albumin g/dl	>3.5	3.5-2.8	<2.8
Prothrombin Time INR	1.7	1.7-2.3	>2.3
Seconds Prolonged	4	4-6	>6
Ascites	None	Mild to moderate	Severe /Diuretic resistant
Encephalopathy	None	Mild to moderate	Severe

Child Turcotte Pugh score

Class A 5 -6 points Least severe
Class B 7 – 9 points Moderately severe
Class C 10 – 15 point s Most severe

Blood sample collected for serum prolactin and assessed using ECLIA method

Statistical Analysis:

The data obtained ere entered in a Microsoft Excel sheet, and statistical analysis was performed using statistical package for the social sciences (Version 20).

Results were presented as mean $\pm$ SD, median and inter quartile range, counts, percentages and diagrams. Pearson / Spearman correlation coefficient was used to find the correlation between serum prolactin and Child Pugh scoring system. $P < 0.05$ was considered statistically significant. All statistical tests were performed two tailed.

RESULTS:

Demographics: The average age group of the patients predominantly were between 30-60 years of age with most between 40-50yrs of age. Female population accounted for 13% and males 87% of the total population. The study population had 81% alcoholics, remaining 19% were non-alcoholic.

Etiology: The most common etiology of cirrhosis of liver was due to alcohol (69%) followed by non-alcoholic fatty liver disease (11%), hepatitis C (11%), hepatitis B (7%) and the remaining causes accounted for 2%. As shown in table No.2 most of the study population had severe ascites which accounted for 68.9% (62/90), followed by 22.2% (20/90) and 8.9% (8/90) in moderate and mild ascites respectively. With regard to hepatic encephalopathy, grade 1 is seen in 31.1% (28/90), grade 2 in 27.8% (25/90) and 14.4% (13/90) of patients in grade 3 hepatic encephalopathy.

Table No.2

ETIOLOGY	NUMBER (n/90)	PERCENTAGE
Alcoholic liver disease	62	68.9
Non alcoholic fatty liver disease	10	11.1
Hepatitis C	10	11.1
Hepatitis B	6	6.7
Others	2	2.2

Child Pugh Score: CTP score was assessed and divided in to three classes based on severity. In our study one patient is in class A, 22 patients belonged to class B and 67 patients in class C.

Table No.3

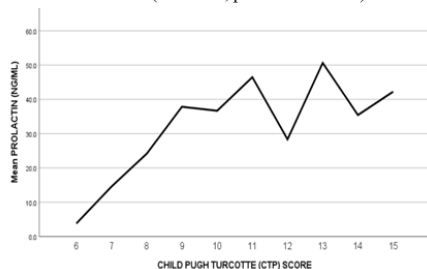
CTP CLASS	FREQUENCY (n/90)	PERCENTAGE
A	1	1.1
B	22	24.4
C	67	74.4

The mean prolactin level was found to be 37.216ng/ml with a standard deviation of 40.01ng/ml. The minimum and maximum prolactin levels were 3.6ng/ml and 202ng/ml respectively.

Table No.4

PROLACTIN ng/ml	NUMBER(n/90)	Percentage
1-14.9	23	25.6
15-39.9	41	45.6
>=40	26	28.9

While correlating prolactin levels with CTP score, one patient in class A has <15ng/ml of prolactin. Of the 22 patients in Class B, 9 had <15ng/ml, 11 patients had in the range 15-39.9 ng/ml and 2 had > 40 ng/ml of prolactin. In Class C, 13 had <15ng/ml 30 patients had in the range 15-39.9 ng/ml and 24 had > 40 ng/ml of prolactin of the total 67 patients. A graph is depicted which showed increasing prolactin levels with increasing CTP score. A positive correlation is found between Serum prolactin CTP score ($r=0.177$, p value = 0.038).



Graph 1

DISCUSSION:

Cirrhosis of liver is a major health problem affecting an individual both financially and physically. Various hormonal changes occur in CLD due to liver dysfunction. Elevation of prolactin in CLD can be attributed to decreased hepatic degradation, altered dopamine metabolism and feedback regulation, porto- systemic shunting affecting pituitary hormone clearance.

Our study demonstrates that serum prolactin levels increased with increasing severity in the illness and can be used as a surrogate marker along with CTP score. Similar results were obtained by Jha SK et al., (2016) In a prospective cohort study by to assess the serum prolactin in patient with liver disease. Patients with cirrhosis, with or without encephalopathy, had a statistically significant ($P<0.05$) rise in blood prolactin. In a study by Khalil FM et al., (2017) to assess the serum prolactin levels as a biological marker of severity in liver cirrhosis. Patients with hepatic encephalopathy exhibited considerably greater levels of prolactin than patients without encephalopathy. Prolactin levels were also shown to be substantially associated to the degree of ascites. In a cross-sectional study by Sakhnani DR et al.,(2021) to assess the prolactin as a possible new marker for severity of liver cirrhosis results of the study indicated that blood prolactin levels were positively correlated with both the modified Child Pugh Score and Fibroscan in terms of predicting the severity of the illness.

CONCLUSION:

There is a significant positive correlation between serum prolactin level and Child Pugh score in patients with chronic liver disease. Serum prolactin may be useful adjunct bio marker in assessing the severity of chronic liver disease.

Limitations:

The study sample was small and need further large multi centric studies for generalization of results worldwide

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