

**Title: CORRELATION BETWEEN SERUM SODIUM LEVEL AND  
SEVERITY OF CHRONIC LIVER DISEASE**

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# INTRODUCTION

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- Chronic Liver Disease have been associated with significant mortality and disability.
- Despite significant numbers associated with this clinical condition, biomarkers related to early deterioration and early complication development has not been looked upon extensively.

# INTRODUCTION

- Few biomarkers have been studied one of which is serum sodium levels.
- We aimed to estimate the serum sodium levels in patients with chronic liver disease and to study its correlation with severity of the disease.

# **METHODOLOGY**

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- This cross-sectional observational study included 195 patients of chronic liver disease aged  $\geq 18$  years presenting to the Medicine Department of VMMC and Safdarjung Hospital.
- Demographic data was collected and clinical assessment of severity of presentation was done using CTP scoring system.
- Serum sodium level was measured within 24 hours of admission.

# METHODOLOGY

- Inclusion Criteria
  - All chronic liver disease patients above the age of 18 years.
  - All genders

# METHODOLOGY

- Exclusion Criteria
  - Patients with malignancies.
  - Pregnant patients.



# RESULTS

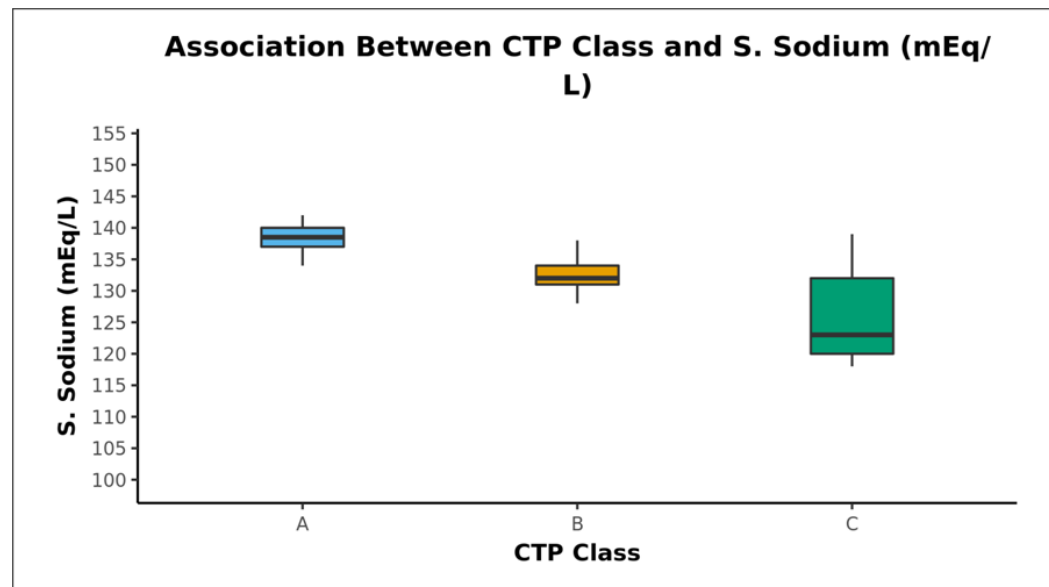
# Results

- Patients presenting with CTP class C were the commonest in our study (47.2%).
- The mean serum sodium levels were significantly lower in CTP class C as compared to CTP class A (126.60 vs 138.19;  $p < 0.001$ ).
- There was a very strong negative correlation between CTP score and Serum sodium, and this correlation was statistically significant ( $r = -0.8$ ,  $p = < 0.001$ ).

# Results

S. Sodium (mEq/L)	CTP Class			Kruskal Wallis Test	
	A	B	C	$\chi^2$	p value
Mean (SD)	138.19 (2.99)	133.15 (3.76)	126.60 (7.26)	75.427	<0.001
Pairwise Comparison of Subcategories of CTP Class				Adjusted P Value	
A - B				<0.001	
A - C				<0.001	
B - C				<0.001	

Table 1: Comparison of the 3 Subgroups of the Variable CTP Class in Terms of S. Sodium (mEq/L)

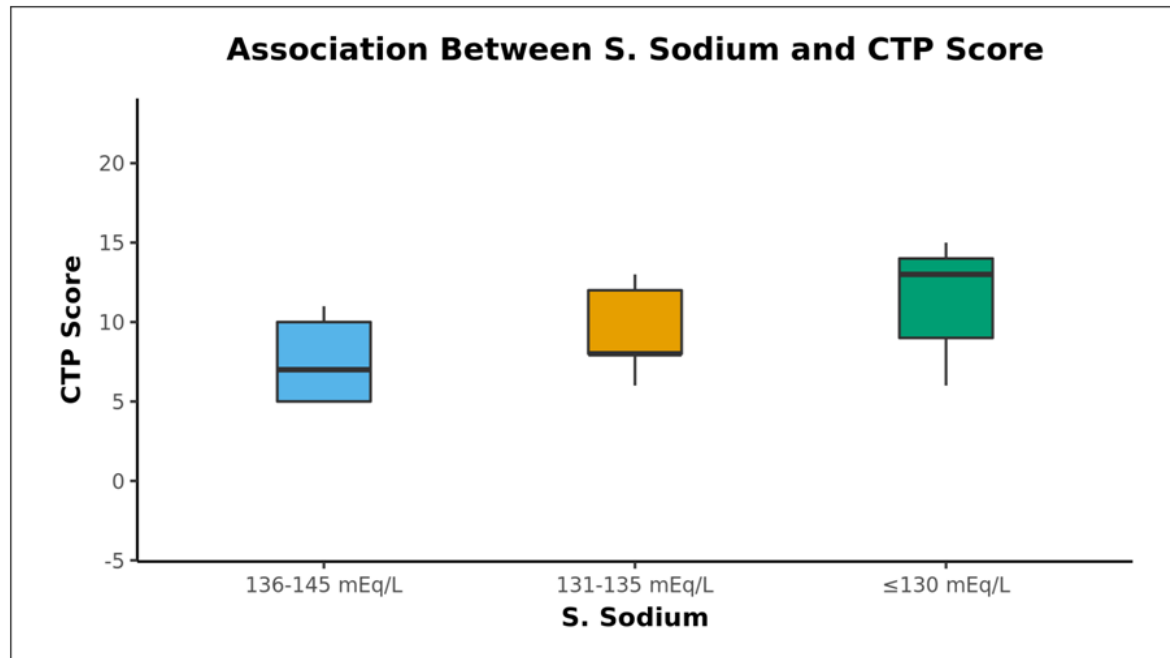


**Fig 1:** Box whisker plot comparing CTP Classes in terms of sodium.

# Results

CTP Score	S. Sodium			Kruskal Wallis Test	
	136-145 mEq/L	131-135 mEq/L	≤130 mEq/L	χ <sup>2</sup>	p value
Mean (SD)	7.03 (2.36)	9.60 (2.23)	12.42 (2.38)	102.170	<0.001
Pairwise Comparison of Subcategories of S. Sodium				Adjusted P Value	
≤130 mEq/L - 131-135 mEq/L				<0.001	
≤130 mEq/L - 136-145 mEq/L				<0.001	
131-135 mEq/L - 136-145 mEq/L				<0.001	

Table 2: Comparison of the 3 Subgroups of the Variable S. Sodium in Terms of CTP Score



**Fig 2:** Box whisker plot comparing sodium groups in terms of CTP Score.

# DISCUSSION

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- Future research is needed to investigate whether incorporation of serum sodium in other scales and scoring system of staging of patients with Chronic liver disease improves its sensitivity and specificity.
- Keeping in mind the usefulness of the newly formed MELD-Na score and its ongoing application in various transplant allocation programmes.
- Well planned prospective studies with serial measurements of serum sodium and its association with clinical deterioration could be done to elucidate its role as a prognostic marker in patients with Chronic Liver Disease.

# CONCLUSION

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- There was significant negative correlation of serum sodium with the severity of CLD ( $P < 0.001$ ) and the levels of serum sodium were found to be significantly lower as the severity increased.
- Thus, serum sodium may be used as a marker of severity and future complications of the disease in the CLD patients.