



HYPONATREMIA AS A PROGNOSTIC MARKER OF CLINICAL SEVERITY IN COMMUNITY ACQUIRED PNEUMONIA IN HOSPITALISED PATIENTS

General Medicine

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ABSTRACT

Background: Hyponatremia is defined as serum Sodium level < 135 mEq/L. The incidence of hyponatremia at hospital admission among CAP patients is found to be 28%. Despite being the cause of significant morbidity and mortality, pneumonia is often misdiagnosed, wrongly treated, and underestimated. Hence this study is an effort to explore how hyponatremia is associated with severity and outcomes, in hospitalized patients with pneumonia. **Materials And Methods :** Data was collected through a prepared proforma which included various parameters related to History, Clinical examination and Laboratory parameters. Serum sodium levels were measured on day 1, 3 and 7 after initial assessment of patients. **Results:** Overall sodium levels correlated with severity of pneumonia (all outcomes) in 79 cases. There were 12 deaths. 7 of them had serum sodium levels less than 125 indicating hyponatremia as a contributory factor of initial severity of pneumonia. **Conclusion:** Patients with severe hyponatremia had high morbidity and mortality in the form of non resolution, complications and death. Thus serum sodium levels can be used as a prognostic biomarker in community acquired pneumonia which is cost effective and easily available.

KEYWORDS

INTRODUCTION

- Hyponatremia is the most common electrolyte disorder in hospitalized patients. Hyponatremia is defined as serum Sodium level < 135 mEq/L.
- The incidence of hyponatremia at hospital admission among CAP patients is found to be 28% and the mechanism behind it has been found to be due to Syndrome of Inappropriate antidiuretic Hormone Secretion.

AIMS AND OBJECTIVES

- To compare hyponatremia with CURB-65 as an initial screening tool for assessment of severity of CAP.
- To evaluate hyponatremia as a prognostic marker in CAP.

MATERIALS AND METHODS

Source Of Data: Santhiram medical college and general hospital, nandyal.

Study Design: Prospective study

Duration Of Study: period of MAY 2021 to OCTOBER 2022

Sample Size: 100 patients with CAP who were hospitalized

Data was collected through a prepared proforma which included various parameters related to History, Clinical examination and Laboratory parameters. Serum sodium levels were measured on day 1, 3 and 7 after initial assessment of patients.

Statistical Methods

Significance is assessed at 5 % level of significance. Analysis of variance (ANOVA) has been used to find the significance of study parameters. Student t test, Levenes test, Chi-square/ Fisher Exact test were also used.

+ Suggestive significance (P value: $0.05 < P < 0.10$)

* Moderately significant (P value: $0.01 < P < 0.05$)

** Strongly significant (P value: $P < 0.01$)

Inclusion Criteria

- Patients gave written informed consent.
- Patients of either sex aged 18 years and above.
- Pneumonia patients diagnosed to have hyponatremia at the time of admission.

Exclusion Criteria

- Hospital Acquired Pneumonia.
- Patients with pseudohyponatremia.
- Patients diagnosed with HIV positive status, hypothyroidism, hypocortisolism.
- Patients with co existing malignancies, Pulmonary Tuberculosis.
- Patients taking drugs causing SIADH.
- Patients with other diagnosed causes of Hyponatremia on

admission.

Table 1: Comparison of serial measurements of key clinical parameters in comparison to Sodium, on days 1, 3 and 7 in Resolving and non resolving pneumonias.

Average of key parameters	Type	Day 1	Day 3	Day 7	P value
Serum sodium	resolving	129.0	132.81	137.0	0.071
	Unresolving	128	133.4	128.41	0.042
Total Counts	resolving	14,115.09	12,403.51	9,475	0.032
	Unresolving	14,891	13,698	10,391	0.080
Pulse rate	resolving	98.91	88.89	83.78	0.053
	Unresolving	101.29	90.31	84.48	0.258
Blood pressure	resolving	116/76	122/84	124/80	0.078
	Unresolving	118/78	110/80	102/70	0.080
Respiratory rate	resolving	25.01	19.94	17.58	0.098
	Unresolving	26.02	20.79	18.23	0.139
Temperature (F)	resolving	100.2	99.0	98.47	0.046
	Unresolving	100.57	99.23	98.65	0.456

DISCUSSION

The normal range taken for adults was 135-145 meq/L and all patients with sodium < 135 were considered to have hyponatremia. On the day 1 of admission 40% of patients had serum Sodium levels between 126 to 130, 34 % had levels between 131-134, and 14% had levels less than 125 meq/L and 3% less than 120. When serum levels were analysed at the time of discharge, there was significant increase in the sodium levels ($p=0.31$) in resolving pneumonias. Whereas in un resolving pneumonias ($n=10$) there was either a persistent drop in sodium, an initial increment followed by a drop or a very slow improvement in serum sodium. Overall sodium levels correlated with severity of pneumonia (all outcomes) in 79 cases. There were 12 deaths. 7 of them had serum sodium levels less than 125 indicating hyponatremia as a contributory factor of initial severity of pneumonia. Also indicating that significant and symptomatic hyponatremia is a poor prognostic factor in pneumonia.

As the severity of pneumonia increases (indicated by PSI classes 3,4,5 respectively), the sodium value on admission is also low, showing a correlation. But the CURB-65 score, is less than 2 in majority of patients with PSI class 4 and 5 (70% and 82% respectively) This indicates that Serum sodium is a better indicator of severity of pneumonia than CURB-65.

CONCLUSION

Patients with severe hyponatremia had high morbidity and mortality in the form of non resolution, complications and death. Thus serum

sodium levels can be used as a prognostic biomarker in community acquired pneumonia which is cost effective and easily available.

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