



A STUDY OF CLINICAL PROFILE OF SODIUM IMBALANCE IN PATIENTS ADMITTED IN INTENSIVE CARE UNIT AT TERTIARY CARE HOSPITAL AT SANGLI.

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ABSTRACT **INTRODUCTION:** Sodium(Na) imbalance is commonly observed electrolyte abnormality in many diseases in Intensive Care Unit(ICU)patients. So we have undertaken this study to find clinical presentation& etiology of Na imbalance at tertiary care hospital.

MATERIAL AND METHODS: Cross sectional observational study, included 50 patients having Na imbalance of various etiology. Thorough case history, physical examination, routine and specific lab investigations were done to find out the underlying etiology, clinical features.

INCLUSION CRITERIA: Patients having hyponatremia i.e. sodium level <135mEq/L,Hypernatremia-those having sodium level >145mEq/L.

EXCLUSION CRITERIA: Patients less than 16 years of age.

OBSERVATIONS- Hyponatremia(78%) is more common than Hypernatremia(22%). Sodium imbalance had significant impact on functioning of central nervous system. In our study, 85% patients had altered level of consciousness, while 15% were asymptomatic.

RESULTS- In our study of 50 patients 15% were asymptomatic with Na imbalance, 11% had somnolence, 10% had stupor, 9% had semicomatose while 8% had coma.

CONCLUSION: Hyponatremia is more common because of various etiologies than hypernatremia. Most common cause of Hyponatremia was dehydration due to acute gastroenteritis, chronic laxative use followed by use of diuretics.

KEYWORDS :

INTRODUCTION-

Electrolyte and acid-base maintain homeostasis. As Na the principal solute in the extra cellular compartment, the plasma osmolality changes with S.Na concentration & is tightly regulated within a narrow range of 275-290 mosm/kg^{8,9}. An imbalance can have deleterious effect on the body, especially on central nervous system^{12,4,5}.

Disturbances are frequent and potentially dangerous complications in the intensive care unit (ICU). It complicates 5-7% of acute care hospital admissions and up to 30% of admissions to the intensive care unit and is a major medical complication in the developing world¹². ICU admissions have Acute Kidney Injury (AKI) because of different etiologies & comorbidities like hypovolemic, septic shock, hepatic failure etc^{11,12}.

Antidiuretic hormone (ADH) is the prime regulator of body water. It acts on the kidneys to increase total body water. It is a physiological response to a drop in plasma volume or an increase in serum osmolality, that causes the release of ADH¹⁵. In SIADH, there is a persistent production of ADH despite body fluid hypotonicity and an expanded effective circulatory volume so that the negative feedback mechanism that normally controls ADH fails and ADH continues to be released^{13,4,7,8}.

The symptoms directly attributable to hyponatremia primarily occur with acute and marked reductions in the plasma S.Na levels and reflect neurologic dysfunction induced by cerebral edema and possibly adaptive responses of brain cell osmotic swelling. Hyponatremia induced cerebral edema occurs primarily with rapid (over 1 to 3 days) reductions in the S.Na. The severity of symptoms generally reflects the severity of cerebral over hydration^{2,3}.

Nausea and malaise are the earliest finding, and may be seen when S.Na falls below 125-130 mEq/L. It is followed by headache, lethargy, and obtundation, Confusion, Personality changes Muscle cramps Muscular weakness and eventually seizures, Ataxia, coma, Non-cardiogenic pulmonary edema and respiratory arrest if the S.Na < 115-120 mEq/L^{2,8,9,12}. are not rare. Drowsiness Diminished reflexes death are mostly seen in ICU.

AIMS & OBJECTIVES:

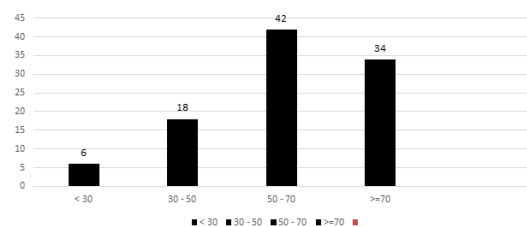
a) To study the clinical profile of patients suffering from sodium imbalance admitted in ICU. b) To study etiology of sodium imbalance in patients Admitted in ICU.

Inclusion criteria: Patients having sodium level <135mEq/L. Patients having sodium level >145mEq/L.

Exclusion criteria: 1) Patient not willing to participate in study. 2) Patients less than 16 years of age. 3) Patients having normal sodium level (i.e. 135-145)mEq/L.

Methodology: Study design- Cross sectional Observational study.

AGE DISTRIBUTION



	50	100%
MALE	30	60%
FEMALE	20	40%
CONDITIONS		%
HYPONATREMIA		78%
HYPERNATREMIA		22%

HYPONATREMIA SYMPTOMS (n=39)

Hyponatremia signs	G.C.S.	%
ASYMPTOMATIC	15	32%
SOMNOLENCE	11	24%
STUPOROUS	10	28%
SEMI COMA	9	10%
COMA	8	6%

HYPERNATREMIA (n=11)

DIAGNOSIS	Percentage
Chronic kidney disease	40%
Pneumonia	10%
Pulmonary thrombo-embolism	4%
Alcoholic liver disease	6%
Dengue	8%

Hypo and Hyponatremia

DIAGNOSIS	HYPONATREMIA %	HYPERNATREMIA %
Chronic kidney disease	32 %	6 %
Pneumonia	8 %	2 %
Pulmonary thrombo-embolism	0 %	4 %
Alcoholic liver disease	2 %	4 %
Dengue	8 %	0 %
Diabetic ketoacidosis	4 %	4 %
Acute gastro-enteritis	6 %	0 %
Myocardial infraction	6 %	2 %
Pancreatitis	4 %	2 %
Anti hypertensive drugs induced	4 %	0 %

OBSERVATIONS:

Sodium imbalance had significant impact on functioning of central nervous system Dehydration was the most common cause of sodium imbalance.

CONCLUSIONS:

Hyponatremia is more lethal than hypernatremia. Hyponatremia is far more common than hypernatremia.

- In addition to severity and duration of Sodium imbalance the coexisting disease also has a major impact on CNS manifestation.
- The patients suffering for CKD are more prone to hyponatremia and CNS manifestation are more common and severe.
- Irrespective of severity and duration of Sodium imbalance GCS score is never less than 8.

Most common cause of dehydration was acute gastroenteritis ,septicemia,acute & chronic kidney injury .

So,whatever reason causing electrolyte imbalance especially Na,needs prompt attention & treatment.

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