



ORIGINAL RESEARCH PAPER

Clinical Laboratory

TO STUDY THE POTASSIUM ABNORMALITIES IN RELATION TO CLINICAL PROFILE, AETIOLOGY, MANAGEMENT AND OUTCOME IN CHILDREN ADMITTED TO PAEDIATRIC INTENSIVE CARE UNIT OF A TERTIARY CARE TEACHING HOSPITAL

KEY WORDS:

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INTRODUCTION:

- Potassium is the most abundant cation in the intracellular fluid.
- The high intracellular concentration of potassium produce a chemical gradient that is used to produce the resting membrane potential of cell.
- The majority of body potassium is in muscle. <1% of total body potassium is in the plasma.
- Normal level of potassium is 3.5mEq/L–5.5mEq/L.

Aims and Objectives:

To study the potassium abnormalities in relation to clinical profile, aetiology, management and outcome in children admitted to Pediatrics intensive care unit (PICU) of a tertiary care teaching hospital.”

1. To study the incidence of potassium abnormalities at the time of admission in children admitted to PICU.
2. To study the potassium abnormalities in relation to the primary underlying illness.
3. To study the possible association of potassium abnormalities with morbidity and mortality in children admitted to the PICU.

MATERIALS AND METHODS :

- It is a prospective observational study conducted at PICU, PDU Medical College, Rajkot, during January 2021 to June 2022.
- 211 children of the age group between 1 month and 12 years admitted in PICU fulfilling the inclusion and exclusion criteria were included in the study.
- Potassium was estimated by the ion-selective electrode method. Reference range:
- Hyperkalemia: Serum sodium >5.5 mEq/L
- Hypokalemia: Serum sodium <3.5 mEq/L

INCLUSION CRITERIA:

1. Children of age 1 month to 12 years admitted to PICU.
2. Patients' relatives giving positive informed consent.

EXCLUSION CRITERIA:

1. Children who had expired within 1 hour of admission.
2. Children who were referred from other hospitals with prior treatment.
3. Children who left against medical advice from PICU.

RESULTS:

- Table shows the relationship between the age and gender of the study population.
- Out of the 118 male children, 39.8% were < 1 year, 30.9% were 1 – 2years, 13.6% were 2 – 5 years and 16.9% were above 5 years.
- Out of the 93female children, 40.9% were < 1 year, 25.8% were 1 – 2 years, 17.2% were 2 – 5 years and 16.1% were above 5 years.

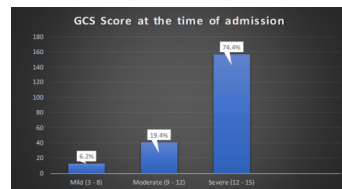
Agegroup	Male	Female
< 1 year	47(39.8%)	38(40.9%)
1-2years	35(30.9%)	24(25.8%)

2-5years	16(13.6%)	16(17.2%)
>5years	20(16.9%)	15(16.1%)
Total	118(100%)	93(100%)

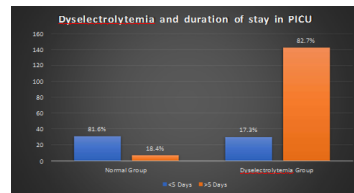
- Potassium abnormality (hypokalemia + hyperkalemia) was detected in 28.9% of cases.

Potassium	Hypokalaemia	42	19.9%
	Hyperkalaemia	19	9%

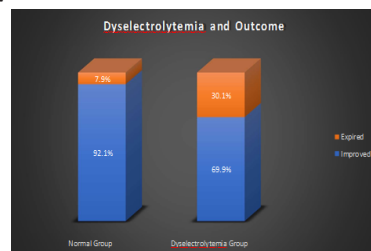
- GCS Score <8 was observed in 6.2% patient, Between 9-12 in 19.4%, between 12-15 in 74.4% patients.



- The duration of PICU stay was longer (> 5 days) in patients with potassium abnormality when compared to normal potassium group.



- Among hypokalemia cases, 24% had expired whereas in hyperkalemia cases 38.1% had expired. In cases with normal potassium level 15.8% had expired. Although children with potassium abnormality had increased mortality.



OBSERVATION:

- There was no significant association found between potassium abnormality and age, gender distribution.
- There was a statistically significant association found between potassium abnormality and GCS score and number of days of PICU stay.
- There was a statistically significant association found between mortality and potassium abnormality (p-value: 0.012). The risk of mortality increased with increasing severity of hypokalemia and hyperkalemia which was also statistically significant (p-value:<0.00001).

CONCLUSION:

- Electrolyte abnormalities are common in critically ill

children.

- As they do not always manifest with specific signs and symptoms, a high index of suspicion is required to identify them. Dyselectrolytemias significantly influence the outcome.
- despite multiple determining factors. Presence of electrolyte imbalance at the time of admission is an important prognostic marker in critically ill children irrespective of the primary disease process. Thus, vigilant monitoring of electrolytes and timely and optimal correction of electrolyte abnormalities are the keys to survival in a critically ill child.

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