

Frequency of Serum Electrolyte Derangement among Children having Acute Diarrhea and Dehydration at a tertiary care hospital

AMNA WAJDAN¹, SARA RUBAB², SOHAIL ASHRAF³, SULEMAN⁴, RABIA BASHIR⁵, MUHAMMAD AZAM KHAN⁶

¹Assistant Prof. Paediatric Medicine, Nishtar Medical University/ Hospital, Multan

²Senior Registrar, Paediatric Medicine, Nishtar Medical University/ Hospital, Multan

³PGR, Paediatric Medicine, Nishtar Medical University/ Hospital, Multan

⁴Assistant Prof. Paediatric Medicine Nishtar Medical University/ Hospital, Multan

⁵Assistant Prof. Paediatric Medicine, Nishtar Medical University/ Hospital, Multan

⁶Associate Prof. Paediatric Medicine, Nishtar Medical University/ Hospital, Multan

Correspondence to Dr. Sara Rubab, Senior Registrar

ABSTRACT

Aim: To study serum electrolyte derangements among children with acute diarrhea presenting with dehydration.

Design of study: Cross-sectional and descriptive study in department of Paediatrics, Nishtar Hospital, Multan for six months i.e. from 01-05-2019 to 31-10-2019.

Methodology: 188 children having acute diarrhea with dehydration were included. Five ml of blood was drawn and estimation of serum Sodium and potassium levels were done.

Results: In 188 cases, 118 (62.8%) were males and 70(37.2%) were females. Mean age was 2.5±1.5 years. Of these 188 cases, some dehydration was noted in 118(62.8%) cases and 70(37.2%) cases had severe dehydration. Hyponatremia was noted in 118(62.8%) cases and hypokalemia was noted in 77(41%) cases.

Conclusion: High frequency of hyponatremia and hypokalemia was seen in our study in children with acute diarrhea and dehydration. Hyponatremia and hypokalemia was significantly associated with age, gender and grades of dehydration.

Keywords: Acute Diarrhea, hypokalemia, Dehydration

INTRODUCTION

In initial two years of life, every child develops at least 3-4 attacks of diarrhea¹⁻². Paediatric mortalities due to diarrhea are about 1.87 million/ year in whole world. In this data, about 70% of these children belong to developing countries³⁻⁴. According to WHO, >700 million attacks of diarrhea in <5 years of age are reported in middle income countries.⁵ Infectious microorganisms responsible may include E. coli, different viruses, protozoal species and helminthes which are transmitted through oral and fecal route⁶.

METHODOLOGY

This cross-sectional and descriptive study in paediatrics department, Nishtar Hospital, Multan with a duration of six months from 01-05-2019 to 31-10-2019. One hundred and eighty eight patients with acute diarrhea. Sample size has been calculated by using following formula; $n = z^2pq/d^2$, where, $p = 39.3\%$ (frequency of hypokalemia in acute diarrhea with dehydration), $q = 100 - p$, $d = \%$. Non-probability consecutive sampling technique was used.

Inclusion Criteria: Both genders with age ranging from 1 month to 10 years with acute diarrhea/ dehydration of duration < 15 days. While patients with chronic and bloody diarrhea and acute renal failure were excluded.

Data collection: Permission was taken from Institutional Ethical Committee for this study. Informed consent was taken from the parents. Five ml of blood was drawn for estimation of serum Sodium and potassium levels. All the data was analyzed using SPSS-20. Descriptive statistics was applied to calculate mean and SD for serum Na & K

levels. Frequencies and percentages were tabulated for the categorical variables like gender, age groups, grades of dehydration, hyponatremia and hypokalemia. P value <0.05 was considered as significant.

RESULT

The detail of results is given in tables 1, 2, 3, 4, 5

Table 1: Gender distribution

Gender	n=	%age
Male	118	62.8
Female	70	37.2
Total	188	100

Table 2: Age distribution

Age groups	n=	%age
Up to 5 Years	174	92.6
>5 Years	14	7.4
Total	188	100

Table 3: Grades of dehydration

Grades	n=	%age
No Dehydration	00	00
Some Dehydration	118	62.8
Severe Dehydration	70	37.2
Total	188	100

Table 4: Hyponatremia in study cases

Hyponatremia	n=	%age
Yes	118	62.8
No	70	37.2
Total	188	100

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Table 5: Hypokalemia in study cases

Hypokalemia	n=	%age
Yes	77	41
No	111	59
Total	188	100

DISCUSSION

Our study comprised of 188 patients meeting inclusion criteria. In 188 cases, 118(62.8%) cases were males and 70(37.2%) cases were females. One of the study showed that there are 61.4% cases with male dominance⁷. This study is in accordance with our study. In another study, it is reported that there are 61.3% male cases⁸. This is also in favor of our study. Zahoor and colleagues also reported 66% male dominance⁹. These results are in accordance with our study.

In our study, mean age was 2.53±1.52 years. Our study showed that 174(92.6%) cases were of age upto 5 years. A study conducted by Moyo and colleagues showed maximum cases upto 5 years⁷. These results are in favor of our results.

Regarding electrolytes disturbances, a study conducted in Nigeria has reported 60.5% hyponatremia and 35.1% hypokalemia in acute diarrhea having dehydration¹⁰. This study is in favor of our study.

CONCLUSION

High frequency of hyponatremia and hypokalemia was seen in our study in children with acute diarrhea and dehydration. Hyponatremia and hypokalemia was significantly associated with age, gender and grades of dehydration.

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