



A STUDY ON ASSOCIATION OF SERUM ELECTROLYTES IN FEBRILE SEIZURES- A CASE CONTROL STUDY IN TERTIARY CARE CENTRE

Dr. Saifuddeen A A

Presenting, Department Of Paediatrics, Kanachur Institute Of Medical Sciences, Mangalore

Dr. Md Rizwan Atif

Post Graduate Department Of Paediatrics, Kanachur Institute Of Medical Sciences, Mangalore

KEYWORDS :

INTRODUCTION

- Brain among many other human tissue and organs, may be influenced by electrolyte disturbances. Therefore electrolytes disturbances need to immediately recognised as may cause severe and life threatening complications when neglected or inappropriately treated.
- Febrile seizure is most common cause of seizures in children. Incidence of febrile children in india around 5-10%.
- Many studies have been conducted to identify risk factors due to its association with later development of epilepsy but the risk factors remain largely unknown.
- Studies have shown different (often inconclusive) results for association of serum electrolytes and febrile seizure.
- Seizures are often in seen in patient with sodium disorders. hence our study to assess the occurrence and association of dyselectrolytemia in febrile seizures.

Aim and Objectives

- AIM: To access serum electrolytes levels in febrile seizures and febrile children without seizures.
- OBJECTIVES: To access the occurrence ,association of dyselectrolytemia in febrile seizures.
- To study the association between serum sodium levels and febrile seizures.

Materials and Methods

STUDY DESIGN	CASE CONTROL SYUDY
STUDY PERIOD	AUGUST 2022 TO JANUARY 2023
PLACE OF STUDY	DEPARTMENT OF PAEDIATRICS KANACHUR INSTITUTE OF MEDICAL SCIENCE AND RESEARCH CENTER
SAMPLE SIZE	90(CASES-45,CONTROLS-45)

Inclusion Criteria

- FOR FEBRILE SEIZURE GROUP: Cases included children aged 6 months to 5 years admitted with febrile seizures.
- FOR FEBRILE CONTROL GROUP: Controls included children aged 6 months to 5 years who got admitted with febrile illness

Exclusion Criteria

- Developmental delay
- History of birth asphyxia
- Children with neurological infections
- K/c/o epilepsy
- Children with afebrile seizures

RESULTS AND ANALYSIS

- 45 children considered as cases(group 1) and 45 children considered as controls(group 2).
- Gender distribution in both groups male preponderance observed in both groups.
- Both groups were distributed and studied based on probable cause of fever, most of febrile seizures(42.2%) and other group(35.6%) had upper respiratory tract infections.
- Mean temperature recorded in group with febrile seizure and group with no febrile seizures was 102.16F and 102.4F

respectively, no significant association noted with this parameter.

Table 1. Comparison Between Cases And Controls Regarding Gender

Gender	Cases	Controls	Total
Male	29(64.4%)	27(60.0%)	56(62.2%)
Female	16(35.6%)	18(40.0%)	34(37.8%)
total	45(100.0%)	45(100.0%)	90(100.0%)

Table 2. Distribution Of Study Subjects Based On Probable Focus Of Fever

Probable focus	Group 1	Group2	total
Asom	1(2.2%)	2(4.4%)	3(3.3%)
Diarrhoea	6(13.3%)	4(8.9%)	10(11.1%)
Dysentery	1(2.2%)	0(0.0%)	1(1.1%)
Enteric fever	2(4.4%)	1(2.2%)	3(3.3%)
URTI	19(42.2%)	16(35.6%)	35(38.9%)
LRTI	4(8.9%)	5(11.1%)	9(10.0%)
WALRI	2(4.4%)	2(4.4%)	4(4.4%)
Viral fever	6(13.3%)	6(13.3%)	12(13.3%)
No focus	4(8.4%)	9(20%)	13(14.4%)
total	45(100.0%)	45(100.0%)	90(100.0%)

- Occurrence of dyselectrolytemia among children with febrile seizures(group 1) compared with non seizure group, 15 children (33.3%) in group 1 had abnormal sodium levels in form of hyponatremia, however no significant association seen in control group.
- This feature is statistically significant in our study group with p value equal to 0.001 (table 3)
- In study 9 children in group 1 had recurrent febrile seizure in same afebrile period also had lower sodium levels.

Table 3. Association Of Serum Sodium Levels With Febrile Seizures

Sodium	Cases	Controls	total	Test statistics	P value
Normal	30(66.7%)	44(97.8%)	74(82.2%)	14.899	0.001 *
Abnormal	15(33.3%)	1(2.2%)	16(17.8%)		
Total	45 (100.0)	45(100.0)	90 (100.0)		

Statistical test: Chi Square test

*p value < 0.05 is considered statistically significant

Table 4. Association Of Serum Potassium Levels With Febrile Seizures

Potassium	Cases	Controls	Total	Test statistics	P value
Normal	41(91.1%)	44(97.8%)	80(94.4%)	1.906	0.167
Abnormal	4(8.9%)	1(2.2%)	5(5.36%)		
Total	45 (100.0)	45(100.0)	90 (100.0)		

Statistical test: Chi Square test

*p value < 0.05 is considered statistically significant

- The association of serum potassium and serum chloride levels was not noted.
- There was no significant association for both serum

potassium and chloride levels when the analysed in both the study groups.The p value was >0.05

Table 5. Association Of Serum Chloride Levels With Febrile Seizures

Chloride	cases	Controls	Total	Test statistics	P value
Normal	42(93.3 %)	43(95.5)	85(94.4)	0.2118	0.645
Abnormal	3(6.7%)	2(4.5%)	5 (5.6%)		
Total	45 (100.0)	45(100.0)	90 (100.0)		

Statistical test: Chi Square test

*p value <0.05 is considered statistically significant

DISCUSSION

- Taylor et aln,in his study stated that the incidence of febrile seizures is more in male children than in female children.
- Similar study conducted by Kaputu kalala et al stated that upper respiratory tract infections were most often implicated provoking factors, occurring in 69.5% of patients.
- Similar study conducted by AI Rubae et al,low serum sodium levels observed in cases group when compared to control group,while no significant differences in potassium and chloride in both groups.
- Kenney et al, have shown that measurement of serum electrolytes may result in very low number of abnormal findings
- There are very few studies on serum chloride levels in febrile seizures,Soini et al, studied serum sodium chloride and potassium found no significant differences.

CONCLUSION

- Estimation of serum electrolytes is essential for the rational understanding of pathogenesis and management of febrile seizures
- The association between serum electrolytes changes is likely to play clinically significant role in causing febrile seizures.
- Routine measurement of serum electrolytes, especially sodium is warranted in subjects with febrile seizures.
- However there are certain limitations in this study in terms of population size and different material and methods,more studies required to study the association of serum electrolytes in febrile seizure.

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