

Clinical and Laboratory Characteristics of Febrile Seizure in Children Presenting with Seizure

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ABSTRACT

Introduction: Febrile seizures are generally defined as seizures occurring in children from 6 months to 60 months of age in association with a fever greater than 38°C (100.4°F), who do not have evidence of an intracranial cause (e.g. infection, head trauma, and epilepsy), another metabolic cause of seizure (e.g. electrolyte imbalance, hypoglycemia, drug use, or drug withdrawal), or a history of an afebrile seizure. **Aims:** To find clinical and laboratory characteristics of febrile seizure. **Methods:** A hospital based cross sectional study was performed in Nepalgunj Medical College, Kohalpur, Banke from March 2021 to February 2022. Children of aged 6 months to 60 months, with fever and seizure admitted in Department of Pediatrics and visiting in outdoor fulfilling inclusion criteria were taken for the study. Detailed history and examination was performed, Data related to age, sex, family history, recurrence and relevant investigations was carried out in all patients. **Results:** Out of 3294 admitted patients, 82 children with febrile seizure were studied, in which 55 (67.1%) male and 27 (32.9%) were female respectively which accounts for 2.03:1 ratio. Majority of 34 (41.46%) belongs to 13-24 months of age. 70 (85.4%) had children simple febrile seizure and 12 (14.6%) had complex febrile seizure. 25 (30.5%) had recurrence history. Majority of children had history of cough 26 (31.7%). Mean total leukocyte count (TLC) was slightly higher and other are within normal range. **Conclusion:** Febrile seizure is more common in male, majority of children affected are below two years of age. Simple febrile seizure is more common variety.

Keywords: Complex febrile seizure; febrile seizure; recurrence; simple febrile seizure

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INTRODUCTION

Febrile seizures are generally defined as seizures occurring in children from 6 months to 60 months of age in association with a fever greater than 38°C (100.4°F), who do not have evidence of an intracranial cause (e.g. infection, head trauma, and epilepsy), another metabolic cause of seizure (e.g. electrolyte imbalance, hypoglycemia, drug use, or drug withdrawal), or a history of an afebrile seizure. Febrile seizure is a major challenge in pediatric age, because of its high incidence in young children and its tendency to recur. It presents as simple and complex febrile seizure. Simple febrile seizure are generalized seizures, lasting less than 15 minutes not recurring within 24 hours, and with no post-ictal neurological abnormalities. Complex febrile seizure is focal, prolonged or recurrent within 24 hours or associated with postictal neurological abnormalities, including Todd paresis. Febrile status epilepticus is a febrile seizure lasting longer than 30 minutes. Most patients with simple febrile seizure have a very short postictal state and usually return to their baseline normal behavior and consciousness

within minutes of the seizure. A child who had a past history of at least one febrile seizure and presented with another episode of febrile seizure was regarded as recurrent febrile seizure. This study was conducted to know the clinical and laboratory profile of children with febrile seizure.

METHODS

This study was hospital based cross sectional study, conducted in Department of Pediatrics Nepalgunj Medical College Teaching Hospital, Nepal, from March 2021 to February 2022. Non probability (convenient) sampling method was used to calculate the sample size. Febrile children of age 6 months to 60 months with temperature >100.4° F (>38 °C) with seizure were included. Children with birth asphyxia or hypoxic ischemic injury, cerebral palsy/ Global development delay, a febrile seizure and of seizure disorder on having anticonvulsant were excluded.

Detailed history, clinical examination of all children was done. Data related to age, sex, family h/o, recurrence h/o were

noted. Routine blood counts, serum electrolyte, random blood glucose calcium were determined in all children. CT- scan head was done.

Statistical analysis

All proforma were reviewed and data were processed and analyzed by using Statistical Package for Social Science (SPSS) software version 20. Variables were expressed in frequencies and percentages. Descriptive statistics such as mean, range, were computed. Chi-square test and Fisher’s exact test were used.

Ethical Consideration

Before starting the study, ethical approval was taken from Institutional Research Committee. Every participant’s willingness was considered before including them in the study. The information was kept confidential and was used only for research purpose and every participant was provided with the right to withdraw from the study at any time.

RESULTS

Among 3294 total admitted in pediatric department, 82 children were of febrile seizure, which constitutes 2.48 % of cases of febrile seizure.

Age (months)	Male	Female	Total
6-12	12 (66.7%)	6 (33.3%)	18 (100%)
13-24	22 (64.7%)	12 (35.3%)	34 (100%)
25-36	12 (75.0%)	4 (25.0%)	16 (100.0%)
37-48	3 (37.5%)	5 (62.5%)	8 (100%)
49-60	6 (100.0%)	0 (0%)	6 (100.0)
Total	55 (67.1%)	27 (32.9%)	82 (100.0%)

Table I : Age wise distribution with sex

Total 82 children with febrile seizure were studied, in which 55 (67.1%) male and 27 (32.9%) were female respectively which accounts for 2.03:1 ratio. Majority of 34 (41.46%) belongs to 13-24 months of age, 18 (21.95%) belongs to 6-12 month of age which is second most common age group.

Sex	Seizure		Total
	Simple	Complex	
Male	47 (85.5%)	8 (14.5%)	55 (100.0%)
Female	23 (85.2%)	4 (14.8%)	27 (100.0)
Total	70 (85.4%)	12 (14.6%)	82 (100.0%)

Table II: Types of seizure according to sex

70 (85.4%) had simple febrile seizure and 12 (14.6%) had complex febrile which shows simple febrile commonest variety

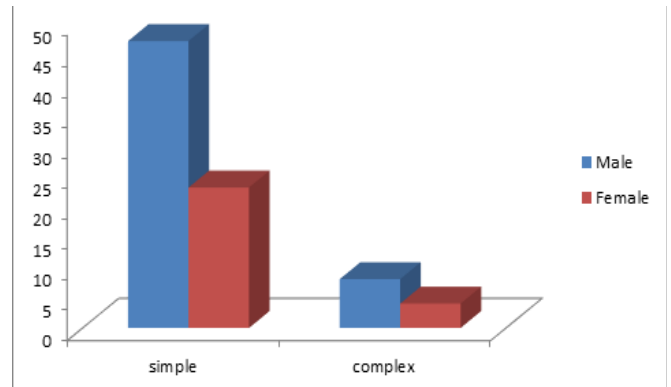


Figure 1: Showing types of seizure in accordance with sex

Variable	Yes	No	Total
Vomiting	9 (11.0%)	73 (89.0%)	82 (100.0%)
Headache	3 (3.7%)	79 (96.3%)	82 (100.0%)
Abdominal pain	2 (2.4%)	80 (97.5%)	82 (100.0%)
Cough	26 (31.7%)	56 (68.3%)	82 (100.0%)
Family h/o	6 (7.3%)	76 (92.7%)	82 (100.0%)
Recurrence h/o	25 (30.5%)	57 (69.5%)	82 (100.0%)

Table III: Clinical feature

In majority of children with febrile seizure, the most commonest complains by which children presented are cough 26 (31.7%), vomiting 9 (11.0%), headache 3 (3.7%), abdominal pain 2 (2.4%) respectively. 6 (7.3%) had family h/o of seizure, either to other sibling or to parents.

Descriptive Statistics	N	Minimum	Maximum	Mean	Std. Deviation
Hemoglobin	82	7.60	14.00	11.0051	1.12486
Total Leuokocyte Count	82	4540.00	29000.00	11532.5122	4984.44365
Platelet Count	82	18100	785000	298306.10	121764.766
Urea	82	11.94	70.00	27.2928	10.58151
Creatinine	82	.12	.84	.4767	.17248
Sodium	82	126	148	135.96	3.942
Potassium	82	3.20	5.20	4.0662	.46774
Random Blood Sugar	82	62.0	124.0	93.624	8.5654
Calcium	82	7.75	11.50	9.1290	.67635

Table IV: Lab Parameters

In lab parameters, Total leukocyte count mean value is slightly higher, and others- serum electrolytes, random blood glucose and calcium are within normal range

Sex	Yes	No	Total
Male	19 (34.5%)	36 (65.5%)	55 (100.0%)
Female	6 (22.2%)	21 (77.8%)	27 (100.0%)
Total	25 (30.5%)	57 (69.5%)	82 (100.0%)

Table V: Recurrence h/o according to sex

25 (30.5%) had recurrence h/o among which 19 (34.5%) were male and 6 (22.2%) were female respectively.

DISCUSSION

Out of 3294 of total cases admitted, febrile seizure was found to be 2.48% cases, which is comparable to studies done by Shrestha D et al¹, Canpolat M et al², Shrestha et al³, Pokhrel et al.⁴ In our study Febrile seizure was peak in age group of 13-24 months which is inconsistent with other studies done by Shrestha D et al¹, Shrestha et al³, Pokhrel et al⁴, Winkler AS et al⁵, Delpisheh A et al.⁶ Febrile seizure is lowest in age group of 49-60 months. Febrile seizure is more common in male gender in comparison with female in our study which was similar to other studies done by Shrestha D et al¹, Shrestha et al³, Pokhrel et al⁴, Mahyar A et al⁷, Hussain et al⁸, Ojha AR et al.⁹

Simple febrile seizure is more common than complex febrile seizure in our study, which was in consistent to study done by Shrestha D et al¹, Shrestha et al³, Pokhrel et al⁴, Delpisheh A et al⁶, Ojha AR et al.⁹ In contrast to study by Aggrawal et al¹⁰, Winkler AS et al⁵, Al-Khathlan et al¹¹ where complex febrile seizure was predominant, 52.17%, 71.4% and 55% respectively.

In our study, first complain was cough, second was vomiting in children of febrile seizure which shows URTI infections, which was in consistent to study done by Shrestha D et al¹, Shrestha et al³, Pokhrel et al⁴, Ojha AR et al⁹, Aggrawal et al¹⁰, Deng CT et al¹² where URTI was the cause of Fever.

In laboratory analysis, Total leukocytocount (TLC) was slight higher, other test of serum electrolytes, Calcium, Random blood glucose were normal in range, not significant in children with febrile seizure. Only 7.3% children had family h/o febrile seizure in our study, which was similar to other studies done by Shrestha D et al¹, Shrestha et al³, Mwipopo EE, et al¹³, Offringa H et al.¹⁴

Only 30.5% children had recurrence h/o in our study, which was inconsistent to study done by Shrestha D et al¹, Shrestha et al³, Biswas R et al¹⁵ which showed 33%, 31.3% and 32.5% respectively. Recurrence h/o was more common in male children in comparison to female children.

CONCLUSION

Febrile seizure is more common in male, majority of children affected are below 2 years of age. Simple febrile seizure is more common variety. Serum electrolyte is in normal range. Recurrence is more common in male.

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