



FEBRILE SEIZURES: DEMOGRAPHIC, CLINICAL AND ETIOLOGICAL PROFILE OF CHILDREN ADMITTED WITH FEBRILE SEIZURES IN A TERTIARY CARE HOSPITAL

Dr Shaikh Abdul Muqueet

Assistant Professor Paediatrics at Indian Institute of Medical Science & Research. Warudi, Badnapur Jalna.

Dr Nusrat Rahim Inamdar

Assistant Professor(Paediatrics) at HBTMC & DR RN Cooper Hospital. MUMBAI

Dr Amrut Prajapati

Pediatrician, Subdistrict Government Hospital, Singarva, Ahemdabad.

ABSTRACT

Background: Febrile seizures are a common occurrence in the paediatric population and a cause of great parental anxiety and concern. This study was conducted to evaluate the clinical profile of children presenting with febrile seizure in a teaching hospital.

Methods: The hospital-based prospective study was conducted in the department of Paediatrics, Hindu Hriday Samrat Balasaheb Thackeray Medical College (HBTMC) & Dr R.N. Cooper Hospital, Mumbai from July 2013 to June 2014, to determine the demographic, clinical and aetiological profile of paediatric patients admitted with febrile seizures, and to compare with similar studies. Ethical clearance was obtained from the Institutional Ethics Committee prior to starting the study. Diagnostic criteria as per AAP Clinical Practice Guidelines, 2008 were used.

As defined by AAP febrile seizure occur in absence of intracranial infections, metabolic disturbances or history of afebrile seizures, and are classified as simple or complex. Patients clinically diagnosed as a case of febrile seizure were included in study, while patients with prior episodes of afebrile seizures, abnormal neurodevelopment and not meeting the age criteria were excluded. Details of demography, clinical history including duration of fever, type of seizures, associated morbidities, and family history of febrile seizures/epilepsy were collected using a predesigned proforma. General and systemic examination findings were noted. Collected data was analyzed using Microsoft excel.

Results: Total 50 cases meeting inclusion criteria got enrolled in the study period. Majority of cases (72%) were less than 24 months of age at presentation.

28 cases (56%) were male and 22 (44%) were female. 84% presented with simple febrile seizures and 16% had complex febrile seizures. Family history of febrile seizures was found in six of the cases (12%) Physical examination revealed pallor in 30 (60%) cases of febrile seizures. Acute Viral Illness without focus and URTI were most commonly associated with febrile seizures (92%). Mean temperature is $38.35 \pm 1.9^{\circ}$ Celsius and median temperature is 38.5° Celsius.

Conclusion: In conclusion, majority of patients were male, predominantly of age below two years and admitted with first episode. Simple febrile seizure was the commonest variety. Parents should be properly counselled regarding prophylaxis and benign nature of illness. As most of the cases are of viral etiology, antibiotics should be used with discretion.

KEYWORDS : Anemia, Child, Febrile, Convulsion, Profile

INTRODUCTION

Febrile seizures are a common occurrence in the paediatric population and a cause of great parental anxiety and concern. Febrile seizures (FS) are among the leading causes of paediatric emergency hospital admissions [1] and affect 2- 5% of all young children [2]. Incidence is more in Asian countries and suggested explanation is that infections are more common in this age group in these countries [3]. The National Institute of Health (NIH) consensus statement defines a febrile seizure as "an event in infancy or childhood usually occurring between 3 months and five years of age associated with fever but without evidence of intracranial infection or defined cause for the seizure". The International League Against Epilepsy (ILAE) defines FS as "a seizure in association with a febrile illness in the absence of central nervous system (CNS) infection or acute electrolyte imbalance in children older than one month of age without prior afebrile seizure". FSs are generally divided into two groups: simple febrile seizures (SFS) and Complex FS(CFS) and rarely a third category called febrile seizure epilepticus in which seizure lasts more than 30 minutes without neurological recovery.

Similarly, AAP defines febrile seizure, as seizure which occur in absence of intracranial infections, metabolic disturbances or history of afebrile seizures, and are classified as simple or complex [4].

Simple/typical: within 24hrs of onset of fever, brief <15mins, generalized, brief post ictal drowsiness, only once in 24 hrs. [8]

Complex/atypical: after 24hrs of onset of fever, prolonged >15mins, focal, multiple seizures/day. [8]

Febrile Seizures arise from a wide array of genetic and environmental factors though the main case for this disorder still needs to be recognised. Various risk factors are said to play a role in aetiology of FS are gender, developmental delay, breast-feeding duration, sudden high body temperature, maternal history of alcohol consumption/smoking, family history, [3] bacterial and viral infections, [5] certain vaccinations, [6] and iron and zinc deficiencies [7]. The recurrence rates of FSs vary in different parts of the globe [2]. Risk factors for recurrence are low fever at initial seizure and family history of afebrile seizures [3]. Numerous studies have been performed worldwide investigating the incidence, recurrence and risk factors associated with febrile seizures. The current study was planned to evaluate the clinical profile of children presenting with febrile seizure in a teaching hospital, and data was compared with similar studies.

METHODOLOGY

This study was hospital-based prospective conducted on Indoor cases of febrile seizures admitted in Paediatrics ward & Intensive Care Unit of the department of Paediatrics, Hindu Hriday Samrat Balasaheb Thackeray Medical College (HBTMC) & Dr R.N. Cooper Hospital, Mumbai from July 2013 to June 2014 with case study proforma and consent which was previously reviewed and accepted by the hospital's Ethics Committee.

Objectives of Study was to evaluate the clinical profile of children presenting with febrile seizure in a teaching hospital and to compare data with other available similar studies.

1. STUDY DURATION : 1yr. (July 2013 to June 2014)

2. **SAMPLE SIZE:** All the patients meeting inclusion criteria over a period of 1yr were included in study.
3. **STUDY POPULATION:** All children in the age group of 6 months-5years, hospitalized fulfilling the inclusion criteria.
4. **INCLUSION CRITERIA:**
 - I. Diagnostic criteria as per AAP Clinical Practice Guidelines,2008 were used. (7) Child (Male/Female) in the age group of 6 months to 60 months, admitted for febrile seizures in the department of Paediatrics, was enrolled in the study.
 - II. Patient meeting inclusion criteria, whose parents /guardians were willing to give written informed consent.
5. **EXCLUSION CRITERIA:** patients with either of the following
 - I. CNS infections
 - II. Seizure disorders/ prior episodes of afebrile seizures
 - III. abnormal neurodevelopment
 - IV. not meeting the age criteria
6. **STUDY METHODOLOGY:** 50 cases were enrolled based on the inclusion and exclusion criteria after taking informed consent.

Patients's clinical details and blood reports were entered in the case proforma. Details of demography, clinical history including duration of fever, type of seizures, associated morbidities, and family history of febrile seizures/epilepsy were collected. General and systemic examination findings were noted. (Appendix I attached).

STATISTICAL ANALYSIS

SPSS software package was used for statistical analysis. P<0.05 was considered as significant.

RESULTS

Age	Frequency (n=50)	Percentage
6-12 months	14	28%
13-24 months	22	44%
25-36 months	5	10%
37-48 months	3	6%
49-60 months	6	12%
Statistical Analysis		
Mean	23.98 ± 31.98 months	
Median	18months	
Mode	18months	
S.E. of Mean	2.263	
S.D.	15.99	

Majority of cases (72%) were less than 24 months of age at presentation.

Of the 14 children who were more than 24 months, 11 presented with 1st episode of febrile seizure and 3 were admitted for recurrent episode of febrile seizures.

Characteristics	Frequency (n=50)	Percentage
SEX		
Male	28	56%
Female	22	44%
NATURE OF SEIZURE		
Simple	42	84%
Complex	8	16%
EPISODE OF SEIZURE		
First	43	86%
Recurrence	7	14%
FAMILY HISTORY		
Present	6	12%
Absent	44	88%
PALLOR		
Present	30	60%
Absent	20	40%

In the present study, out of 50 cases studied, 28 (56%) were male and

22 (44%) were female. 84% presented with simple febrile seizures and 16% had complex febrile seizures. Family history of febrile seizures was found in six of the cases (12%). Physical examination revealed pallor in 30 (60%) out of the 50 cases of febrile seizures.

Focus of infection	Cases (n=50)	Percentage
No focus/Viral Illness	29	58%
URTI	17	34%
LRTI	2	4%
AGE+UTI	1	2%
UTI	1	2%

(URTI- Upper Respiratory Tract Infection, LRTI- Lower Respiratory Tract Infection, AGE- Acute Gastroenteritis, UTI- Urinary tract Infection)

In the present study, Acute Viral Illness without focus and URTI were most commonly associated with febrile seizures (92%).

Mean	38.35± 1.9o Celsius
Median	38.5o Celsius
S.E. of Mean	0.1341
S.D.	0.9481

- Mean temperature is 38.35± 1.9° Celsius and median temperature is 38.5° Celsius.
- Earlier study shows similar result with mean temperature at admission is 38.6° C⁴⁴

DISCUSSION

The mean age of children in this study was comparable to other studies[9-12].

This study reemphasized as previous studies [3],[9], [10], [12], [13] that febrile seizure was more frequent in boys than girls. Male children may be biologically more vulnerable to febrile seizure. However, this study was hospital based and probable gender bias for health seeking behavior might also be the limiting factors.

As described in previous studies [10],[14] generalized seizure was the most frequent seizure, out of which majority of patients had generalized tonic clonic seizure in this study. Similarly family history of febrile seizure was noted in 12 % of patients that was similar to a study in Nepal [9]. However, it should also be noted that parents may be unaware of their past episodes of febrile seizure and thus may confound the exact family history.

In the present study, Acute Viral Illness without focus and URTI were most commonly associated with febrile seizures (92%). Studies have shown that viral illnesses causing URTI symptoms such as Influenza A and Human Herpes virus 6 are more likely to be associated with febrile seizures[19]. Similar results were found by earlier studies [15-17]. The second most common focus of infection in other studies was the GIT [15,18].

Mean temperature is 38.35± 1.9° Celsius and median temperature is 38.5° Celsius. Earlier study shows similar result with mean temperature at admission is 38.6° C [17].

CONCLUSIONS

Majority of patients were male, predominantly of age below two years and admitted with first episode. Simple febrile seizure was the commonest variety.

Parents should be properly counselled regarding prophylaxis and benign nature of illness. As most of the cases are of viral etiology , antibiotics should be used with discretion.

LIMITATIONS:

This study had inherent limitations being a hospital based study.

Recall bias regarding history of febrile seizures in parents as well as exact duration of seizure and details of first episode of febrile seizure could not be minimized.

Appendix I (STUDY PROFORMA)

SUBJECT NO./NAME:		UNIT:	
DOB/AGE:		SEX:	
HOSPITAL NO.:		IN PATIENT NO.:	
DOA:		DOD:	
DIAGNOSIS:			
PRESENTING COMPLAINTS:			
1.FEVER:	TEMPERATURE	DURATION:	
2.SEIZURE:	FIRST	RECURR ENCE	ATYPIC AL
DESCRIPTION:			
DURATION:			
POST ICTAL			
RECURRENCE	AGE OF ONSET	NATURE OF 1 ST SEIZURE	
OTHER COMPLAINTS:			
RS	CVS	GIT	RENAL
BIRTH HISTORY:			
DEVELOPMENTAL HISTORY:		APPROP RIATE	DELAY
IMMUNISATION HISTORY:			
FAMILY HISTORY:		RELATIO N TO THE PATIENT	EPILEPS Y
GENERAL EXAMINATION:			
HEIGHT:		WEIGHT:	HC: AF:
TEMP:	HR:	RR:	BP: GCS: SPO2:
IRON DEFICIENCY: PALLOR/BLUE SCLERA/PLATY/KOILONYCHIA:			
FOCUS OF INFECTION:ENT/ORAL/SKIN:			
SIGNS OF VITAMIN DEFICIENCY:			
NEURO CUTANEOUS MARKERS:			
DYSMORPHIC FEATURES:			
SKULL AND SPINE:		FUNDUS:	
SYSTEMIC EXAMINATION:			
CNS:			
CVS:			
RS:			
PA:			

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