

Original Article

DOI: <https://doi.org/10.47648/jswmc2023v13-01-67>

Disease Pattern and Laboratory Profile of Febrile Convulsion among Admitted Children in SWMCH, Sylhet.

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Abstract

Background: Febrile seizure is the most common cause of convulsion encountered in pediatric practice. Majority of febrile convulsions occurred in first two years of life. The incidence is slightly higher in boys than in girls, but they tend to occur earlier in girls.

Aim of the study: This aim of the study was to evaluate the disease pattern and laboratory profile of febrile convulsion among the children admitted in SWMC.

Materials and methods: This cross-sectional study was done in Sylhet Women's Medical College Hospital from February 2021 to January 2022. Total 174 children aged in between 0-7 years who were admitted in Pediatric department with the complaints of fever and convulsion were included in the study. Data was collected by expert physician with structured questionnaire containing demographic profile, history, clinical examination and laboratory profile. Data were analyzed by descriptive manual.

Results: The results showed that, there were 25 (14.44%) children in age group of 0-2, 108 (62%) in age group of 3-5 and 41 (23.56%) in age group of 6-7 years. The number of male subjects were higher 91 (52%) than female 83 (47%) in the study. The most frequent type of seizure was GTCS which was found in 148 (85%) cases. Leukopenia was found in 92 (52.87%) cases which was the most frequent finding. The most frequent type of disease was upper respiratory tract infection 52 (29.88%) followed by pneumonia 46 (26.43%), gastroenteritis 32 (18.39%), urinary tract infection 32 (18.39%) and otitis media 12(6.89%).

Conclusion: In our study most of the children were 3-5 years of age with male preponderance. Upper respiratory tract infection was found as common cause of febrile convulsion and leucopenia, raised CRP were identified.

Keywords: Febrile; convulsion; Leukopenia; CRP

JSWMC 2023 [13(01)] P: 69-73

Introduction

Febrile convulsion is one of the commonest seizure disorders in children¹. 4% to 10% of children suffer at least one episode of convulsion in the first 16 years of life². It occurs between 6 months to 6 years of age³.

The case is highest in children less than 3 years of age, with a decreasing frequency in older children². Majority of febrile convulsions occurred in first two years of life. The incidence is slightly higher in boys than in girls, but they tend to occur earlier in girls⁴. From literature review it affects as many as 24% of children before 5 years of age⁵. The International League Against Epilepsy (ILAE) has defined as seizure events in children, featured with a temperature over 38°C without any evidence of acute electrolyte imbalances or central nervous system infection⁶. Although convulsion in children is a significant cause of morbidity and mortality, febrile convulsion is still considered as benign and self-limiting. But it is emotionally perceived as terrifying and anxiety provoking as witnessed by the parents^{7,8}. Family history of febrile convulsion is present in 67.81% cases which is very high familial incidence. Variation in prevalence relates to differences in case

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definitions, ascertainment methods, geographical variation, and cultural factors⁹. In USA, South America and Western Europe between 2% and 5% of all children experience febrile convulsion before 5 years. Estimates of frequency of febrile convulsion are much higher in Japan (8%) and Mariana Island (15%)¹⁰. Febrile convulsions in children are usually associated with upper respiratory tract infections, which are mostly viral in origin¹¹ Febrile convulsion is one of the leading causes of doctor consultation on emergency basis and hospital admission in pediatric age group; parent's become greatly panicked by the expression of the disease and also remains anxious about the prognosis of this benign disease, clinical profile and laboratory findings are important for appropriate diagnosis, hence better management and also for parent counseling. A clear understanding of febrile convulsion would help doctors to refine clinical judgment in diagnosing and managing the case. This aim of the study was to find out the disease pattern and laboratory profile of febrile convulsion in children admitted in SWMCH.

OBJECTIVE

The objectives of this cross-sectional study were to see the disease pattern and relative laboratory findings which may be helpful to find out the risk factors of febrile convulsion in children admitted in SWMCH.

Materials & Methodology

This was a cross-sectional study. Total 174 children aged in between 0-7 years who were admitted into Pediatric department in Sylhet Women's Medical College from February 2021 to January 2022 with the complaints of fever and convulsion were included in the study. Patients with a previous history of convulsions, metabolic disorders, head injury, known illnesses of central nervous system (CNS), meningitis and those with focal neurological deficits and seizure disorders and the attendances of sick child who refused to take part were excluded from this study. Data was collected using a structured questionnaire regarding various details like age, sex, duration of convulsion, type of the febrile seizure (GTCS, partial, status), family history of febrile convulsion and epileps, cause of fever, clinical

examination, lab data and outcome of the child. Investigations including complete blood count (CBC), serum electrolytes and urine routine and microscopic examination (R/M/E) were done in all cases. Other investigations were done according to history and clinical examinations like urine C/S, blood C/S and CRP. We could not do any test for viral isolation in our study. A written informed consent was obtained from parents in this study. Data was collected and other information including investigation results was entered. Data were analyzed by using descriptive manual. Moreover, this study was done following the guideline of BMRC (Bangladesh Medical Research Council). All the diagnosis, classification and investigations were done under close supervision of consultant paediatricians.

Results

The aim of the study was to evaluate the clinical profile of febrile convulsion in children admitted in the tertiary care hospital SWMCH. A total 174 patients were selected for the study. Figure-1 showed the age distribution of the study subject. There were 25(14.44%) children in age group 0-2, 108(62%) were in age group 3-5 and 41(23.56%) were in 6-7 years respectively.

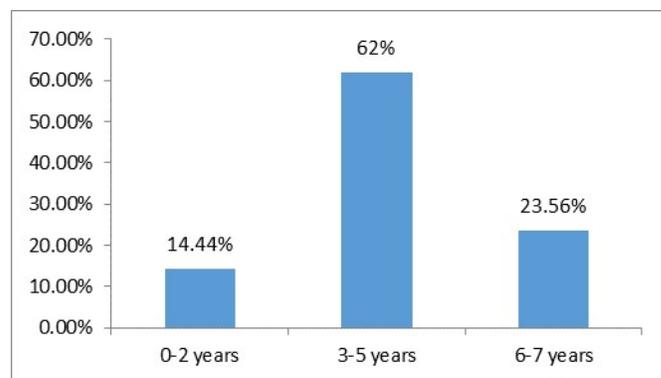


Figure-1: Age distribution of the study subjects (n=174)

Figure-2 showed the gender distribution of the study children. Among the children 91 (52.3%) were male and 83 (47.7%) were female.

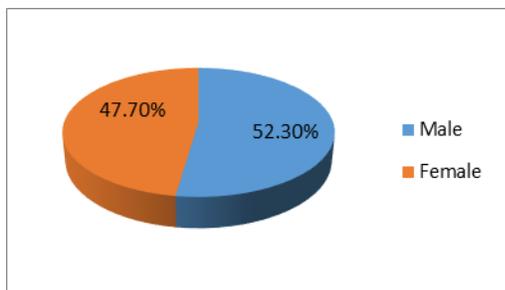


Figure-2: Gender distribution of the study subjects (n=174)

Table-1 presented the characteristics of convulsion of the study subjects. The most frequent type of seizure was GTCS which was found in 148 (85.05%) cases, partial seizure in 37 (21.26%) and status 4 (2.29%). The duration of convulsion was <15 mint in 98(56.32%) cases and 76 (43.67%) in >15 mint. Convulsion was onset in within 24 hours in 121 (69.54%) and after 24 hours in 53 (30.45%). The family history was present in 118(67.81%) cases and absent in 56 (32.18%) cases.

Table-1: Characteristic of convulsion of the study subjects (n=174)

Characteristic of convulsion		Frequency	Percentage
Type of seizure	GTCS	148	85.05
	Partial	37	21.26
	Status	4	2.29
Duration in minutes	<15 minutes	98	56.32
	>15 minutes	76	43.67
Onset	Within 24 hours	121	69.54
	After 24 hours	53	30.45
Family History	Present	118	67.81
	Absent	56	32.18

Table-2 presented the symptoms other than seizure and fever on admission. The most frequent symptom cough was seen in 113(64.94%) cases followed by coryza in 15(08.62%) cases, loose motion in 13(7.47%) cases, abdominal pain in 11 (6.32%) cases, dysuria in 10 (5.74%) cases, as well as ear and throat pain in 11 (6.32%) cases.

Table-2: Presenting complaints of febrile convulsion (n=174)

Symptoms	Frequency	Percentage
Cough	113	64.94
Coryza	15	08.62
loose motion	13	7.47
Abdominal pain	11	6.32
Dysuria	10	5.74
Pain in ear and throat	12	6.89

Table-3 showed the abnormal results on blood examination in patients with febrile convulsion. Leukocytosis was found in 86(49.42%) cases and followed by Leukopenia in 92(52.87%) cases which was the most frequent finding. Thrombocytosis in 84(48.27%) cases, Thrombocytopenia in 79(45.40%) cases, Anemia in 82(41.12%) cases, serum calcium in 37(21.26%) cases, CRP (raised) in 86(50.57%) cases, urine R/M/E in (45.97%) cases and C/S in 84(48.27%) cases.

Table-3: Abnormal results on blood examination in Patients with Febrile convulsion (n=174)

Laboratory findings	Frequency	Percentage
Leukocytosis	86	49.42
Leukopenia	92	52.87
Thrombocytosis	84	48.27
Thrombocytopenia	79	45.40
Anemia	82	41.12
S.Calcium	37	21.26
CRP (raised)	86	50.57
Urine R/M/E	80	45.97
C/S (Org isolated)	84	48.27

Table-4 presented the etiology of fever in patient with febrile convulsion. Upper respiratory tract infection was found in 52 (29.88%) cases and followed by pneumonia in 46 (26.43%), gastroenteritis in 32 (18.39%), urinary tract infection in 32 (18.39%) and otitis media with acute tonsillitis in 12 (6.89%) cases.

Table-4: Etiology of Fever in Patient with Febrile convulsion (n=174)

Etiology of Fever	Frequency	Percentage
Upper respiratory tract infection	52	29.88
Pneumonia	46	26.43
Gastroenteritis	32	18.39
Urinary tract infection	32	18.39
Otitis media and acute tonsillitis	12	6.89
Total	174	100.00

Discussion

In the age distribution of the study subject there were 25(14.44%) children in age group 0-2, 108 (62%) were in age group 3-5 and 41 (23.56%) were in 6-7 respectively. A study conducted by Absar MN et al¹² there were 39% of children below 1 year, 82% below 2 years (including <1 year). Study conducted by Saidul Haque in 1981 revealed that, 39.5% of cases were below 1 year and 60.5% of cases were more than 1 year¹³. There were 91 (52%) male child and 83 (47%) female children. Prevalence of febrile convulsion was predominant in males than females and this is in agreement with the results of other studies¹⁴. In a study conducted by Mahyar et al in 2010 found that gender is an important factor in febrile seizure; in his study, 66% of the infants with febrile seizure were boys¹⁵.

In the characteristics of convulsion of the study subjects, the most frequent type of seizure was GTCS which was found in 148 (85.05%) cases, partial seizure in 37(21.26%) and status 4 (2.27%). 90% of children in this study had GTCS found in the study of Dr.Balajichinnasami¹⁶. The duration of convulsion was <15 mint in 98(56.32%) cases and 76 (43.67%) in >15 minutes.

R Biswas et al¹⁷ showed in his study that the duration of seizure of less than 15 minutes was noted in 87.5% patients and was also nearby to Bessisco et al findings¹⁸. Convulsion was onset in within 24 hours in 121 (69.54%) and after 24 hours in 53(30.59%). The family history was present in 118 (67.81%) cases and absent in 56

(32.18%) cases. Dr. Balajichinnasami¹⁶ and R Biswas et al¹⁷ found 20% present convulsion history in their study. The nature of convulsion was simple in 135 (77.58%) cases and complex in 39 (22.41%) cases also found similar results in other studies^{16,17}.

From the symptoms other than convulsion and fever on admission about the most frequent symptom cough was seen in 113 (64.94%) cases and followed by coryza in 15 (8.62%) cases, loose motion in 13 (7.47%) cases, abdominal pain in 11 (6.32%) cases and dysuria in 10 (5.74%) cases, pain in ear and throat 11 (6.32%) cases. These symptoms were well correlated to the findings of Deng CT et al.¹⁹ but Aliabad et al.²⁰ found that loose motion was the most common symptom of febrile illness in his study.

The abnormal results on blood examination in patients with febrile convulsion, Leukocytosis was found in 86 (49.42%) cases and followed by Leukopenia in 92 (52.87%) cases which was the most frequent finding. Thrombocytosis in 84 (48.27%) cases, Thrombocytopenia in 79 (45.40%) cases, Anemia in 82 (47.12%) cases, S.Ca in 37 (21.26%) cases and CRP (raised) in 86 (50.57%) cases urine R/M/E in 80 (45.97%) cases and C/S in 84 (48.27%) cases. Almost similar observation followed in the study of Dr. Balajichinnasami¹⁶ and R Biswas et al¹⁷.

The etiology of fever in patient with febrile convulsion were found upper respiratory tract infection in 52 (29.88%) cases and followed by pneumonia in 46 (26.43%), gastroenteritis in 32 (18.39%), urinary tract infection in 32 (18.39%) and otitis media with acute tonsillitis in 12(6.89%) cases. In a study otitis media was diagnosed in 5 (n=80) cases and otitis media remains the most common cause of febrile convulsion in a study conducted in Carolina²¹.

Limitation of the study

The present study has some limitations including the fact that this study was conducted in a single hospital and had a small sample size which may not reflect the whole scenario.

Conclusions & recommendations;

In our study, most of the study subjects were 0-5 years of age and most of them were male children. Upper respiratory tract infection was found as common cause of febrile seizure.

Duration of convulsion was less than 15 minutes and Leukopenia, raised CRP, Anemia were identified. However, no definite conclusion could therefore be drawn from this study. So, larger scale, nationwide, longer duration study is recommended.

Conflict of interest:

This study was fully funded by the author and declares no conflict of interest.

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