



MAJOR CLINICAL RISK FACTORS FOR FEBRILE SEIZURES IN CHILDREN AGED SIX TO SIXTY MONTHS.

Shahid Ishaq¹, Ejaz Mazari², Fazal ur Rehman³

1. MBBS, FCPS (Paediatric Medicine)
Senior Registrar Paeds Medicine
The Children's Hospital and
The Institute of Child Health, Multan.
2. FCPS (Paediatric Medicine)
Consultant Paediatric
Tehsil Headquarter Hospital, Rojhan.
3. MBBS, FCPS (Paeds)
PGR Paediatric Medicine
The Children's Hospital and
The Institute of Child Health, Multan.

Correspondence Address:

Dr. Shahid Ishaq
Department of Paeds Medicine
The Children's Hospital and
the Institute of Child Health, Multan.
fazal171@gmail.com

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ABSTRACT... Objectives: Febrile seizures (FS) are the most common type of seizures and typically transpire in children with ages from 6 to 60 months. This study was planned to find out major clinical risk factors for seizures in febrile children who were aged 6 to 60 months. A total of 100 febrile children aged 6 to 60. **Study Design:** Analytical Study. **Setting:** Department of Neurology, Children's Hospital and the Institute of Child Health, Multan. **Period:** From 1st April 2018 to 31st December 2018. **Material & Methods:** Group A had 40 children with febrile seizures while group B had 60 febrile children but without seizures. Demographic features along with family history of (H/O) epilepsy as well as family history of febrile seizure, types of seizure and infection diseases were noted and analyzed using SPSS version 20. Odds ratio was calculated for various risk factors. Chi square test was applied and P value < 0.05 was considered as significant. **Results:** Out of a total of 100 children, there were 54 (54.0%) male and 46 (46.0%) female. There was no statistical difference in terms of gender between the two groups (p value = 0.566). Overall, mean age of the children was 26.02 months with standard deviation of 13.4 months. There were 28 (70.0%) children who reported with simple seizures while complex seizures were found in 12 (30.0%) cases. Statistically significant difference (p value = 0.001) was seen in terms of types of infections between the two study groups. When risk of seizures for various risk factors was calculated, family H/O FS, family H/O epilepsy, and upper RTI were as 14, 7 and 3 times respectively and turned out to be the major risk factors for seizures in febrile children. **Conclusions:** Family H/O FS, family H/O epilepsy and upper RTIs are the major risk factors related with seizures in febrile children. Measures to prevent these risk factors can decrease the burden of FS in our population.

Key words: Epilepsy, Family History, Risk Factor, Seizures.

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INTRODUCTION

Seizures are known as one of the most frequent reasons for children's visit to pediatric emergencies.¹ FS is noted as the commonest kind of seizures involving around 5% of children who are 6 to 60 months of age.^{1,2} FS are described as seizures happening after the age of 1 month, accompanied with fever, without any infections to the CNS, no association with past neonatal or unprovoked seizures, and those children who do not meet the criteria for other acute symptomatic seizures. Most common age involving FS is 6 to 60 months while the mean onset is said to be around 18 months. Incidence of FS falls in between 3 to 8% in children who are younger than 60 months.¹⁻³

Genetics and environmental factors are involved in the pathogenesis of FS. Some studies have stated age < 60 months, family H/O FS, family H/O epilepsy as possible risk factors for FS.⁴⁻⁶ Prenatal issues like asphyxia, complications related to parturition and premature birth are also said to be related with FS.⁷⁻⁹ Over the years, literature has mentioned that majority of the children continue with normal health and growth after FS.^{3,4} In the recent years, it has been noted that children who have FS, may go on to have recurrent FS or are more prone to developing epilepsy.³⁻⁵ This study was conducted to find out major clinical risk factors for seizures in febrile children who were aged 6 to 60 months.

MATERIAL & METHODS

A total of 100 febrile children aged 6 to 60 months were enrolled for this descriptive-analytical study, conducted at the department of neurology, Children's Hospital and the Institute of Child Health, Multan from 1st April 2018 to 31st December 2018. This study was approved by institute's ethical committee. Verbal consent was taken from parents/guardians of the children and data was put on a predesigned proforma. Patients were divided into 2 groups: Group A had 40 children with febrile seizures while group B had 60 febrile children but without seizures. FS was labeled according to the clinical symptoms. Children with meningitis, encephalitis, or with any sort of brain hemorrhage, neurodevelopmental hindrance, those with febrile status epilepticus, and who had any trauma in the past were not included in this study. Demographic features along with family H/O epilepsy as well as family H/O febrile seizure, types of seizure and common infection diseases were noted and analyzed using SPSS version 20. Frequency and percentage were calculated for qualitative variables like gender, family history, type of FS, and various infections like upper respiratory tract infection, urinary tract infections and pneumonia. Mean and standard deviation (SD) were calculated for age and weight of the children. Odds ratio was calculated for various risk factors. Chi square test was applied and P value < 0.05 was considered as significant.

RESULTS

Out of a total of 100 children, there were 54 (54.0%) male and 46 (46.0%) female. In Group-A, there were 23 (57.5%) male and 17 (42.5%) female while in Group B there were 31 (51.7%) male and 29 (48.3%) female. There was no statistical difference in terms of gender between the two groups (P-Value = 0.566). Overall, mean age of the children was 26.02 months with standard deviation of 13.4 months. In Group A, mean age was 25.18 months with standard deviation of 12.5 months whereas in Group B, mean age was 26.6 months with standard deviation of 14.0 months (p value = 0.796).

There were 28 (70.0%) children who reported with simple seizures while complex seizures were

found in 12 (30.0%) cases.

Mean weight of the children in Group A was 10.57 + 2.68 kg in comparison to 10.20 + 2.42 kg in Group B (p value = 0.328).

In Group A, family history of FS was found 13 (32.5%) children in comparison to 2 (3.3%) in children in Group B (P-Value < 0.001). In Group A, 15 (37.5%) children had a family history of epilepsy while in Group B 5 (8.3%) had epilepsy in family history (p value < 0.001). In Group A, 26 (65.0%) children were delivered with cesarean section in comparison to 30 (50.0%) in Group B (P-Value = 0.139).

Statistically significant difference (P-Value = 0.001) was seen in terms of types of infections between the two study groups.

When risk of seizures for various risk factors was calculated, family H/O FS, family H/O epilepsy, upper RTIs and cesarean section were as 14, 7, 3 and times respectively and turned out to be the major risk factors for seizures in febrile children.

Risk Factors	OR	95% CI	P-Value
Family History of FS	13.96	2.94-66.26	< 0.001
Family History of Epilepsy	6.60	2.16-20.17	< 0.001
Cesarean Section	1.86	0.81-4.23	0.139
Upper RTI	3.04	1.31-7.07	0.009

Table-I. Risk factors for seizures in febrile children with or without seizures.

DISCUSSION

Overall, mean age of the children was 26.02 months with standard deviation of 13.4 months. In Group A, mean age was 25.18 months with standard deviation of 12.5 months whereas in Group B, mean age was 26.6 months with standard deviation of 14.0 months (p value = 0.796). In terms of mean age, our results were quite consistent with other studies who found similar mean age in children with febrile seizures.¹⁰⁻¹³

We found 28 (70.0%) children having simple

seizures while complex seizures were found in 12 (30.0%) cases. A local study conducted by Hussain S and colleagues in 2015 and a recent study from Iran found similar results where 78% and 75.3% of children respectively were having simple seizures.^{14,15} Simple FS have been documented as the most frequent type. It is defined as generalized clinical features, duration < 15 minutes and one episode of seizure in 24 hours. Complex FS have focal clinical manifestation with a duration spanning > 15 minutes while > 1 episode in 24 hours.³ Children with FS should be evaluated to rule out any underlying CNS etiology. It has been advised that lumbar puncture needs to be done in infants who are < 12 months of age with prolonged complex FS or febrile status epilepticus, as well as those who have H/O partial antibiotic treatments. In children with simple FS, routine EEG as well as neuroimaging are not advised.³

We found that 32.5% of the children with FS had a positive family H/O FS while 37.5% were having family H/O epilepsy. About 25-40% of children with FS have a positive family history of FS.³ In a recent study from Iran, it was noted that 25% of the children with seizures had a family history positive for FS whereas 17.5% were having positive family H/O epilepsy.¹⁴

There are many causes of seizures in children and it is also known that many other conditions mimic seizures that make it difficult for the timely identification and evaluation for the clinicians.

In the current study, statistically significant difference (P-Value = 0.001) was seen in terms of types of infections between the two study groups. When risk of seizures for various risk factors was calculated, family H/O FS 14 times, family history of epilepsy as 7 times, cesarean section 2 times, upper RTI 3 times were turned out to be the major risk factors for seizures.

FS has a good prognosis in majority of the children but we should keep in mind that the risk for development of epilepsy in the presence of family history of FS as well as family history of epilepsy may project as high as 10%. All the

efforts should be made for early identification of the risk factors and preventing children from these risk factors could prove to be the best option in febrile children.

CONCLUSION

Family H/O FS, family H/O epilepsy and upper RTIs are the major risk factors related with seizures in febrile children. Measures to prevent these risk factors can decrease the burden of FS in our population.



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AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author(s) Full Name	Contribution to the paper	Author(s) Signature
1	Shahid Ishaq	Methodology, Literature review.	
2	Ejaz Mazari	Methodology, Literature review, Data analysis.	
3	Fazal ur Rehman	Data collection, Data analysis, Drafting.	