



Original Article

A prospective study on febrile convulsions among children in Western India.

Kapil Shrimali¹, Gourav Kumar Goyal², Avinash Kumar³

¹Associate Professor, Department of Pediatrics, Pacific Institute of Medical Sciences, Udaipur

²Associate Professor, Department of Pediatrics, Geetanjali Institute of Medical Sciences, Jaipur

³Assistant Professor, Department of Pediatrics and Neonatology, Geetanjali Institute of Medical Sciences, Jaipur

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ABSTRACT

Background: Febrile convulsion is an epileptic seizure usually occurring between 6 months and 5 years of age, associated with fever but without evidence of intracranial infection or defined cause. In absence of proper recognition, correct diagnosis and management, febrile convulsions are prone to under or over treatment. No systemic study has been done in India since last 8-10 years for evaluation of various aspects of febrile convulsion. This led us to do a study on febrile convulsion in tertiary care center. The objective of the study is determining the incidence, risk factors and clinical features of febrile seizures among children. **Methodology:** This was a hospital based prospective study over a period of 2 years from September 2023 to august 2025. Patients presenting with fever and convulsion in pediatrics wards at a tertiary care Hospital, Udaipur, Rajasthan were taken up for the study. **Results:** The incidence of convulsions in this study is 17.8%; incidence of febrile convulsions is 3.7% and incidence of febrile convulsion out of all cases of convulsion 20.7%. Highest no. of patients with febrile convulsions was in the age group of 12 to 24 months (46.5%). Respiratory tract infection constituted majority (95.9%) of infections associated. **Conclusion:** Simple febrile convulsion is most common type of febrile convulsion, consisting of 81.2% of patients. Commonest infection associated with febrile convulsion is respiratory tract infections

Keywords: Febrile convulsion, epilepsy, childhood seizure.

Corresponding Author:

Dr. Avinash Kumar

Assistant Professor, Department of Pediatrics and Neonatology, Geetanjali Institute of Medical sciences, Jaipur, India.

Email: dravisagar@gmail.com

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INTRODUCTION

Febrile convulsion is an epileptic seizure usually occurring between 6 months and 5 years of age, associated with fever but without evidence of intracranial infection or defined cause. Most seizures are less than five minutes in duration and the child is completely back to normal within sixty minutes of the event.¹⁻³

Incidence is varies in different geographic areas. Between 2-5% of children in Europe and US experience at least one Febrile Seizure before the age of 5 yrs, being more common in boys. A study done by Tsuboi in Japan found an average incidence of 5.3% of febrile convulsion. Indian studies suggested that up to 10% of children experience a Febrile Seizure. Recent data indicate that the incidence rate in India is similar to western countries.³⁻⁷

In absence of proper recognition, correct diagnosis and management, febrile convulsions are prone to under or over treatment. No systemic study has been done in India since last 8-10 years for evaluation of various aspects of febrile convulsion. This led us to do a study on febrile convulsion in tertiary care center.^{3,5,6} We did this study with the objective of determining the incidence, risk factors and clinical features of febrile seizures among children.

METHODOLOGY

This was a hospital based prospective study over a period of 2 years from September 2023 to august 2025. Patients presenting with fever and convulsion in pediatrics wards at a tertiary care Hospital, Udaipur, Rajasthan were taken up for the study. Below mentioned criteria were used:

Inclusion criteria:

1. Age between 3 months to 5 years.
2. Patients with fever and convulsion in whom other causes were ruled out.

Exclusion criteria:

1. Patient who is known case of epilepsy and/or associated neurological deficit.
2. Patients had proven CNS infection.
3. Patient having unprovoked convulsion.
4. Patient having past history of neonatal seizures.

A total of 461 patients satisfying above mentioned criteria were enrolled in present study. Thorough history and physical examination was done and proformas were filled up for each patient.

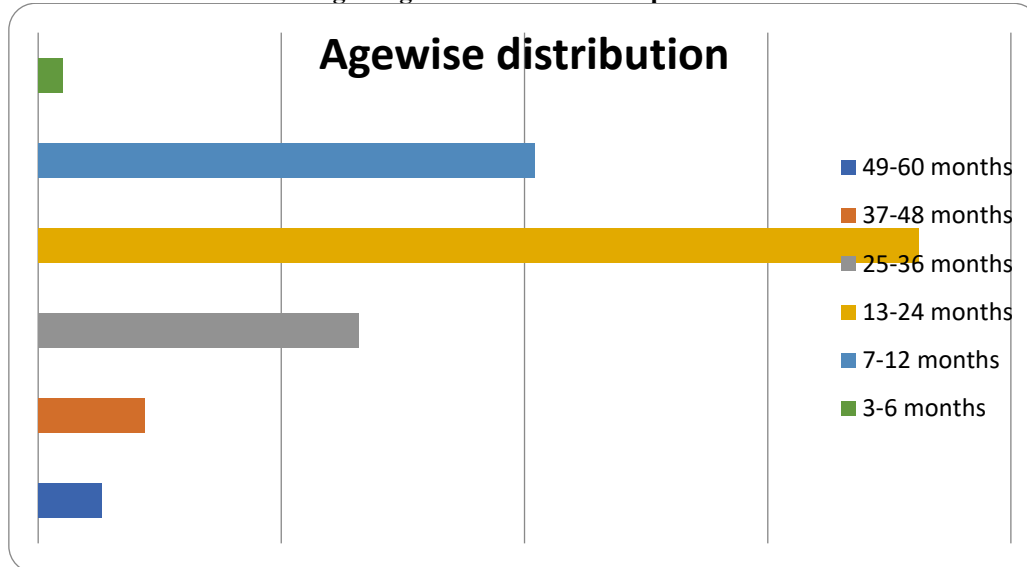
RESULTS:

Out of total 10,508 patients admitted, 1871 were cases of convulsions and out of these 389 were diagnosed as febrile convulsion (first attack) and 72 were febrile convulsions with recurrence. Therefore the incidence of convulsions in this study is 17.8%; incidence of febrile convulsions is 3.7% and incidence of febrile convulsion out of all cases of convulsion 20.7%.

Risk factors

In present study, febrile convulsion is more common in males as compared to female. Male comprised 248 (63.7%) patients as compared to female which is 141 (36.3%). Male: female ratio is 1.7:1.

Fig 1: Agewise distribution of patients



Highest no. of patients with febrile convulsions was in the age group of 12 to 24 months (46.5%). Around 17% of patients had first attack between age of 2-3 years and only 9% children had febrile seizure after the age of 3 years. It suggests that children in the age group of 1-2 year has highest incidence followed by 6-12 months of age and it is lowest in more than 3 years of age.

Around 90% patients belonged to lower and middle socio-economic class.

Respiratory tract infection constituted majority (95.9%) of infections associated with febrile convulsion. Out of which upper respiratory tract infections comprises 52.4% of patients, mainly tonsillo pharyngitis (50.4%) and 43.4% of patients had lower respiratory tract infection. Next common was acute gastroenteritis being 2.8% of patients. We had one patient of wound infection also. In our study malaria was not associated with febrile convulsion. 24.7% of patients had family history of convulsion.

Clinical features

More than 80% of patients had episode of febrile convulsion within 24 hours of fever spike. Most of the patients (41.9%) had history of less than one hour duration between fever and febrile convulsions. Only 17.3% of patients had febrile convulsion after 24 hour of fever spike. 64.8% of patients with febrile convulsion had high grade fever at the time of admission.

In present study, GTC type of convulsion had slightly higher incidence (209 patients out of 389 (53.7%)) than generalised tonic convulsion (169 patients out of 389 (43.5%)). In present study, more than half of the patients (62.8%) had some degree of malnutrition. 81.2% of patients had some degree of anemia out of which 38.8% had mild anemia and 42.4% had moderate anemia. Out of 389 patients, 316 patients had some degree of anemia. Out of these 54.1% of patients had microcytic hypochromic anemia.

In absence of anticonvulsant therapy 48.5% of patients had postictal drowsiness of only for <5 minutes and 83.1% of patients had less than 10 minutes.

DISCUSSION

We found that febrile convulsion is still a major burden in society as around 21% of all Convulsions are febrile convulsions. Overall incidence of febrile convulsion in this study was 3.7% which is comparable to 2.5% mentioned by Ross and colleagues⁸ and 3.5% by Nelson and Ellenberg⁹.

The reason for male predominance is unclear. It may be due to faster rate of brain maturity in females. Higher prevalence of febrile seizures among males has been reported⁹. Our data indicates higher incidence of simple febrile convulsion than complex febrile convulsion. This finding is comparable with Verity C M et al¹⁰.

Similar to our findings, Nelson K B et al found respiratory tract infections associated with 38% febrile seizure episodes, followed by otitis media 23%, pneumonia 15%, acute gastro enteritis 7%, roseola infantum 5% and other causes 12%⁹.

Whether the most important factor in the induction of convulsions is the level of temperature, the rapidity of its rise or both remains the subject of debate. We don't find any correlation of rate of rise of temperature and febrile convulsion.

A. Pisacane et al¹¹ also showed that 88% of patients had anemia. It indicates that anemia may have role in febrile convulsions¹².

CONCLUSION

Simple febrile convulsion is most common type of febrile convulsion, consisting of 81.2% of patients. Commonest infection associated with febrile convulsion is respiratory tract infections (95.9% of patients). 82.7% of the patients developed febrile convulsions within the 24 hours of onset of fever.

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