



CLINICAL AND LABORATORY PROFILE OF FEBRILE SEIZURES IN CHILDREN: A STUDY OF RISK FACTORS

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ABSTRACT

Background: Febrile seizures are the most common type of seizure occurring in children. Understanding the clinical presentation, laboratory findings, and risk factors is essential for effective management and counselling of families.

Objective: To evaluate the clinical and laboratory profiles and identify various risk factors associated with febrile seizures in children.

Material and Methods: This study was conducted in the Department of Pediatrics at a tertiary care hospital. A total of 60 children aged 6 months to 5 years with febrile seizures were included in the study. Clinical data, laboratory findings, and potential risk factors were recorded.

Results: Out of the 60 patients, 35 (58.3%) were male and 25 (41.7%) were female. The most common etiology of fever was viral infections (66.7%). Laboratory evaluations revealed normal findings in 45 (75%) patients, while 15 (25%) had abnormal results, primarily indicating electrolyte imbalances. The majority of patients (70%) had a family history of seizures.

Conclusion: Febrile seizures predominantly affect males and are often associated with viral infections. A significant proportion of patients have a family history of seizures. Understanding these factors can aid in better management and parental counselling.

Keywords: Febrile seizures, children, clinical profile, laboratory profile and risk factors

Introduction:

Febrile seizures (FS) are defined as seizures that occur in children aged 6 months to 5 years, typically in the context of fever, without central nervous system infections or any metabolic abnormalities. They affect approximately 2-5% of children, making them one of the most common neurological disorders in the pediatric population (1). FS can be classified into simple febrile seizures, which are generalized and last less than 15 minutes, and complex febrile seizures, which can be focal or last longer than 15 minutes (2).

The exact cause of febrile seizures remains unclear, but they are thought to result from a combination of genetic and environmental factors. Studies have indicated that children with a family history of seizures are at a higher risk of developing FS (3). Moreover, the presence of certain risk factors, including age at first fever, type of fever, and duration of fever, may also influence the likelihood of seizure occurrence (4).

Understanding the clinical and laboratory profiles of children with FS is crucial for effective management and parental counseling. This study aims to analyze the clinical presentation, laboratory findings, and various risk factors associated with febrile seizures in children.

Aim and objectives

Aim: To study the clinical, laboratory profile, and various risk factors in children with febrile seizures.

Objectives:

1. To evaluate the clinical presentation and laboratory findings in children with febrile seizures.
2. To identify the potential risk factors associated with febrile seizures.

Material and Methods

This observational study was conducted in the Department of Pediatrics at a tertiary care

hospital over six months. A total of 60 children aged 6 months to 5 years who presented with febrile seizures were included in the study. Informed consent was obtained from the parents of all participants. Children with known neurological disorders, previous seizures unrelated to fever, or any identifiable central nervous system infection were excluded from the study.

Data Collection:

A structured pro forma was used to collect data, which included:

- **Demographic details:** Age, gender, and birth history.
- **Clinical presentation:** Duration and type of seizure, frequency of seizures, and associated symptoms (e.g., lethargy, irritability).

- **Laboratory investigations:** Complete blood count, serum electrolytes, and any other necessary investigations to identify the etiology of fever.
- **Risk factors:** Family history of seizures, previous episodes of febrile seizures, and associated infections.

Statistical Analysis:

Data were analyzed using SPSS software, with descriptive statistics used to summarize the findings. Categorical variables were expressed as percentages and continuous variables as mean \pm standard deviation. Chi-square tests were used to assess the significance of associations between categorical variables, with a p-value of <0.05 considered statistically significant.

Results

Table 1: Demographic Characteristics of Children with Febrile Seizures

Parameter	Number of Patients (n=60)	Percentage (%)
Gender		
Male	35	58.3
Female	25	41.7
Age Distribution (months)		
6-12 months	20	33.3
13-24 months	25	41.7
25-60 months	15	25.0

In this study, out of the 60 patients, 35 (58.3%) were male, while 25 (41.7%) were female, indicating a male predominance. The age distribution revealed that the highest incidence of febrile seizures occurred between 13-24 months (41.7%).

Table 2: Etiology of Fever in Children with Febrile Seizures

Etiology	Number of Patients (n=60)	Percentage (%)
Viral Infections	40	66.7
Bacterial Infections	12	20.0
Unknown	8	13.3

The most common etiology of fever was viral infections, which accounted for 40 (66.7%) of the cases. Bacterial infections were identified in 12 (20.0%) patients, while 8 (13.3%) patients had an unknown etiology.

Table 3: Clinical Features of Children with Febrile Seizures

Clinical Feature	Number of Patients (n=60)	Percentage (%)
Type of Seizure		
Simple Febrile Seizures	48	80.0
Complex Febrile Seizures	12	20.0

Duration of Seizures (minutes)		
<5 minutes	45	75.0
≥5 minutes	15	25.0
Family History of Seizures	42	70.0

The clinical evaluation indicated that 48 (80.0%) of the patients experienced simple febrile seizures, while 12 (20.0%) had complex febrile seizures. The majority of seizures (75.0%) lasted less than 5 minutes. Additionally, a significant proportion (70.0%) of patients had a family history of seizures.

Table 4: Laboratory Investigations in Children with Febrile Seizures

Laboratory Investigation	Normal Findings (n=60)	Abnormal Findings (n=60)	Percentage (%)
Complete Blood Count	45	15	25.0
Serum Electrolytes	46	14	23.3
Other Investigations	48	12	20.0

Laboratory evaluations revealed that 45 (75.0%) patients had normal complete blood counts. However, 15 (25.0%) patients had abnormal results, primarily indicating electrolyte imbalances. Additionally, abnormalities were noted in serum electrolytes for 14 (23.3%) patients, while 12 (20.0%) patients had abnormal findings in other investigations.

Discussion

Febrile seizures are a common pediatric neurological condition, primarily affecting children aged between 6 months and 5 years. This study aimed to evaluate the clinical and laboratory profiles and identify various risk factors associated with febrile seizures.

The results indicated a higher incidence of febrile seizures in males (58.3%), which is consistent with previous studies that have reported a male predominance in FS (5). The age group most affected was between 13-24 months, corroborating the literature suggesting that this age range is particularly susceptible to febrile seizures due to immature central nervous system development (6).

The predominant etiology of fever in our study was viral infections, accounting for 66.7% of cases. This finding aligns with several studies indicating that viral infections, such as those caused by respiratory viruses (e.g., influenza, adenovirus) and exanthematous diseases (e.g., roseola), are frequently associated with febrile seizures (7). Bacterial infections, while less

common in this cohort, still accounted for 20% of cases, emphasizing the need for thorough evaluation to rule out serious bacterial infections.

Clinical features of febrile seizures showed that simple febrile seizures were more common (80%) than complex febrile seizures. The majority of seizures (75%) lasted less than 5 minutes, which is consistent with the definition of simple febrile seizures (8). The presence of a family history of seizures in 70% of patients reinforces the genetic predisposition associated with febrile seizures, as children with a family history are at a higher risk (9).

Laboratory investigations revealed that 25% of patients had abnormal findings, with electrolyte imbalances being the most common. This highlights the importance of metabolic assessment in children presenting with febrile seizures, as early identification of electrolyte disturbances can guide appropriate management (10).

Conclusion

In conclusion, this study highlights the clinical and laboratory profiles of children with febrile seizures. Febrile seizures predominantly affect males and are often associated with viral infections. A significant proportion of patients have a family history of seizures. These findings underscore the importance of understanding the clinical presentation and risk factors associated with febrile seizures to

improve management strategies and provide adequate parental counseling.

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