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Clinical Aspects of Patients with Febrile Convulsion: A survey in Mashhad

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ABSTRACT

Introduction: Febrile seizures (FS) happen in 2-5% of children aged 6 months to 5 years. Several studies have confirmed that between 2 to 7% of children with FS, develop epilepsy later in life. This study was performed to evaluate the clinical aspects of patients with febrile seizure in our region.

Materials and Methods: This is a retrospective descriptive cross-sectional study that was performed in the pediatric ward of Ghaem hospital in Mashhad, Iran from Sep. 2004 to March 2005. 68 patients aged 6 months to 5 years were evaluated.

Results: Most patients were male and aged between 1 to 3 years. 25% had a past history of febrile seizures. Upper respiratory tract infections and gastroenteritis were among the most common causes of febrile seizures, respectively. Simple febrile seizures were seen in 64.7% of the cases. Most of such patients had body temperature above 38.5˚c at the time of seizure occurrence.

Conclusion: Febrile seizures were more frequently seen in boys aged 1 to 3 years. It most commonly occurred following an upper respiratory tract infection and due to rise in body temperature above 38.5 ˚c.

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Introduction

Seizures are the most frequent neurological disorder in children. Their prevalence is higher in kids younger than 3 years of age, with a reducing rate in older children. It seems that seizures are the cause of about 1% of all emergency department visits, which reaches to 2% in children's hospitals emergency departments. Febrile seizures (FS) happen in 2-5% of children aged 6 months to 5 years (1, 2). Although some researchers have demonstrated a male-sex preference in febrile seizures, other studies have shown no such difference (3, 4). On the other hand, several studies have confirmed that between 2 to 7% of children with febrile seizures, develop epilepsy later in life.

The certain criteria of febrile seizure which can predict the chance of progression to later epilepsy includes family history of epilepsy, complex febrile seizures and abnormalities in EEG. Various theories have been described in cases with epilepsy following febrile seizures such as hippocampal injury or mesial temporal sclerosis (MTS) after prolonged complex febrile seizures.

It was shown in a study from Pakistan that 56% of children with febrile seizures were above 12 months of age (5). In another study performed in the US the mean age of patients with first febrile seizure was

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17 months (6). In Nguefack et al study a positive family history of febrile seizures was detected in 36.4% of the patients (7). Upper respiratory tract infections were the most common cause of febrile seizures in the study by Teran et al (8). The present study was performed aimed at detecting the clinical aspects of febrile seizures in patients admitted to Ghaem hospital in Mashhad.

Materials and Methods

This was a retrospective cross-sectional study with no therapeutic management or intervention involved. The prortocol was approved by Mashhad University of Medical Sciences Ethics Committee.

Study population consisted of 68 patients with febrile seizure (FS) aged 6 months to 5 years.

Records available from Sep. 2004 to March 2005 in the pediatric ward of Ghaem hospital were reviewed. Febrile seizures were defined as seizures in patients aged 6 months to 5 years due to fever above 38˚C with no sign of meningo encephalitis or metabolic disorders. The patients were divided into 2 groups: Simple febrile seizure which was defined as a single seizure with no focal features which lasted less than 15 minutes, and complex febrile seizures. Data including age, sex, family history of febrile seizures or epilepsy, history of previous febrile seizures in patients, associated infection, body temperature and type of seizures were collected. The inclusion criteria was any patient aged 6 months to 5 years with febrile seizures of either the simple or complex type. Children with neuro developmental delay, epilepsy, meningoencephalitis, hydrocephaly, chronic diseases, and metabolic disorders including hypoglycemia, hypocalcaemia, hyponatremia and hypernatremia were excluded from the study. Data were analyzed with the SPSS software, version 13.

Results

61.8% of the patients aged 1-3 years. 16.2 % were below one year and 22% had above 3 years of age. In total, 60.3% of the patients were male and 39.7% were female. The most common associated infection was upper respiratory tract infection and gastroenteritis as 65.4% and 20%, respectively.

91.2% of the cases had no history of febrile seizures in their first degree relatives and 89.7% had no family history of epilepsy.

25% of patients had a history of previous febrile seizure attacks. Simple and complex febrile seizures were revealed in 64.7% and 35.3% cases, respectively. Most patients (54.4%) had a hospital stay less than 48 hours while 45.6% had been discharged after 48 hours of hospitalization.

Different presentations of complex febrile seizures in the studied cases are shown in table 1.

Table-1: Presentation of complex FS

Presentation	Frequency	Percent
Duration>15minuts	3	12.5
Focal seizures	1	4.2
Multiple seizures	20	83.3
Total	24	100

Complex febrile seizures had been repeated in the first 24 hours in 80% of the cases and after the first 24 hrs in the other 20%. It was recorded that most of the cases (92.6%) had fever≥38°C before the seizure occurrence. In table 2 the body temperature of patients at the time of admission has been demonstrated.

Table-2: Body temperature in patient with FS at admission time

Body temperature(˚c)	Frequency	Percent
38-38.4	12	25.5
≥ 38.5	35	74.5
Total	47	100

A positive family history of epilepsy was recorded in 8.3% and 11.4% of patients with complex and simple febrile seizures, respectively. 33.3% of cases with complex febrile seizures had a history of previous febrile seizure attacks. The same figure was 20.5% in patients with simple febrile seizures.

Eventually, a positive family history of febrile seizures was found in 9.1% and 8.3% of patients with simple and complex febrile seizures, respectively. In our study a white blood cell count above 10000 in mm3 was detected in 42.6% of the cases.

Discussion

In the present study the mean age of the patients was 1-3 years. A history of previous seizure attacks was found in 25% whereas most attacks had occurred at body temperature above 38.5˚c. The most common associated infections were upper respiratory tract infections and gastroenteritis.

In a study from Pakistan, most FS patients were above 12 months of age (5).

In another study conducted in Spain, the mean age was 20.6 ± 8.9 months and most of the cases were male. The male to female ratio was 1.09 in those who had their first attack of febrile seizure under 15 months and 1.96 in those cases who had hadit above 15 months of age (9). In a study in Denmark it was reported that febrile seizures were more common in those patients with a family history of frequent attacks of febrile seizures (10).

A systematic review revealed that a positive family history of febrile seizures was seen in 28.8% of cases with febrile seizures, and that 69.3% of cases with febrile seizures had the simple type (11).

Another study in Pakistan detected that febrile seizure attacks were most commonly seen in those cases with a past history of febrile seizures (12).

Sweeney et al reported that most of the cases with febrile seizures had a hospitalization period less than 48 hours (13). In the study by Khoshdel et al, 85% of the cases had simple febrile seizures (4). A study performed in Nepal showed the recurrence of febrile seizures to be higher in those cases with low body temperature in their first febrile seizure attack. Also, 62% of the cases were male and 80% had simple febrile seizures (14).

Some of our findings including age, sex, associated infections, length of hospitalization and type of febrile seizures are similar to other studies. Yet, a positive family history of febrile seizures in our cases was obviously less common than similar studies. The role of environmental factors in the occurrence of febrile seizures is noticeable but genetic or familial factors may have no significant role in our population.

The main study limitation was the small sample size for which further studies with a larger population are recommended in the future.

Conclusion

Based on the present study febrile seizures are more common in males aged 1-3 years. Respectfully, Upper respiratory tract infections and body temperature ≥38°5c have the strongest association with the occurrence of febrile seizures.

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