RISK FACTORS FOR FEBRILE SEIZURE IN CHILDREN IN HAWLER GOVERNORATE

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ABSTRACT

Background and Objective: Febrile seizure is the most common convulsive disorder in childhood. Intense parental anxiety and fear from recurrence is observed. The aim is to determine the risk factors for febrile seizure in children.

Methods: this observational study undertaken from 1st February to the end of June 2008. One hundred ten children between 6months-6years of age admitted with attack of febrile seizure were recruited. Demographic data including age, sex, type & duration of febrile seizure, family history of febrile seizure and epilepsy, interval between fever onset and occurrence of seizure were recorded.

Results: Out of 110 patients 54 cases were male (49.1%) & 56 were female (50.9%), male to female ratio among those with recurrent febrile seizures was 1.4:1.The peak age group for febrile seizure was 13-24 months (49.1%) & the mean age was 22.1 months. Complex febrile seizure was observed in 40patients (38.2%). Positive family history of febrile seizure was noted in 48 patients (43.6%) and family history of epilepsy in 10 patients (9.1%) was positive. It was found that 52.7% of cases were having respiratory tract infection, 39.1% having gastroenteritis & in 2% no focus of infection were found.

Conclusions: It can be concluded from the present study that first attack of febrile seizure in younger age (≤12months), complex febrile seizure & Positive family history of febrile seizure in children ≤12months were risk factors for recurrent febrile seizures.

Key words: Febrile seizure,children.

INTRODUCTION:

Seizures are the most common cause for referral to pediatrics neurology practice. It is a common neurological disorder in the pediatric age group & occur with a frequency of 4-6 cases/1000 children (2-4% of children between ages 6 months-6 years)[1]. A seizure is a sudden , transient disturbance of brain function, manifested by involuntary motor, sensory, autonomic , or psychic phenomena , alone or in combination , often accompanied by alteration or loss of consciousness[2]. Febrile seizure was distinguished from other seizures in the mid – 19th century; treatment at that time was directed to the underlying cause of fever rather than the seizure itself, with the introduction of thermometer at the end of 1800s, fever was understood to be the primary trigger of seizure[3]. The exact mechanism & aetiology of febrile seizure is not clear, but viral infections of the upper airways, exanthema subitum, acute otitis media, infection of the urinary tract and febrile reactions after vaccination are considered as the most frequent precipitating factors. It has been recognized that there is significant genetic component for susceptibility to febrile seizures[4]. Febrile seizures that occur after immunizations are occurring in response to temperature elevation[5]. No investigations are routinely necessary in all children after a febrile seizure. Most population-based studies of febrile seizure have shown the vast majority of children with febrile seizure have an excellent prognosis. Intelligence is not impaired and mortality and

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rare and are usually due to pre-existing conditions[6].

PATEINTS AND METHODS:

This study was conducted among 110 children taken randomly aged 6-72 months of age of both genders admitted to Raparin teaching hospital of pediatrics presenting with seizure & fever (1st or recurrent attacks) during the period from 1st February to end of June 2008. Cases of trauma, meningitis, neurologically handicapped, congenital malformation of the CNS, epilepsy, history of drug ingestion and those with suspected metabolic disorders were excluded from the study after taking detailed history & performing clinical examination. For the purpose of study, the case definition of febrile seizure was a convulsive seizure in infant & children aged 6-72 months in association with temperature of 37.8c^{o} or higher. A seizure was defined as simple if it was generalized, lasting for less than 15 minutes and not recurred with in 24 hours, while seizure regarded complex if it lasted 15 minutes or more and/ or if it recurred more than one time with in 24 hours and/ or if the seizure had focal onset[7, 8]. Full neurological examination was done to exclude neurological disorders like CNS infection. Corrected axillary temperature was taken for all patients at time of examination. Parametric tests (Chi square) were used for normally distributed and non parametric tests for skewed data. P value less than

RESULTS:

One hundred ten cases were studied, their age were between 6months – 72 months, Table (1) showed that 81 cases were under 2 years of age, 27 cases were in age group 6-12 months & 54 cases (49.1%) were between 13-24 months [36 cases (46.2 %) with first attack & 18 cases (56.25%) with recurrent attacks. In (Table 2) revealed that male gender accounts for 49.1% (54 cases) with male to female ratio is the same but among those with recurrent attack there was male predominance with male to female ratio was 1.4:1.Also this Table reveals relation between febrile seizure(FS) & family history of FS ;48 cases (43.6%) had positive family history of febrile seizure, Those with first attacks 38.5% of them had positive family history (11.5% in 1st degree relatives) while between those with recurrent attacks 56.3% had positive family history (15.6% in 1st degree relatives). Only 10 cases (9.1%) had family history of epilepsy, 6 of them (60%) develop frequent attacks of seizure during the same illness (complex seizure).,Table (3) shows recurrence rate in those cases who has positive family history of FS & they get first attack of FS in young age (<1 year old), In table 4, fifty four cases (40.9%) had fever for more than 24hours before developing seizure & only 21 cases (19.1%) had fever for 1-6 hours, from those 19.1% of cases, 52.4% developed more than 1 attack of febrile seizure during the same illness.

Table 1: Age distribution in febrile seizures.

Age in months	1stattack	2ndattack	>2attacks	Total
6-12	19 (24.4%)	5 (27.8%)	3 (21.4%)	27 (24.5%)
13-24	36 (46.2%)	11 (61.1%)	7 (50.0%)	54 (49.1%)
25-49	20 (25.6%)	0 (0%)	4 (28.6%)	24 (21.8%)
50-72	3 (3.8%)	2 (11.1%)	0 (0%)	5 (4.5%)
Total	78 (100%)	18 (100%)	14 (100%)	110 (100%)

Table 2: Febrile seizure &its relation with gender, family history of FS & epilepsy.

Risk factors	1stattack	2ndattack	>2attacks	Total	P-value
1.**Gender** Male Female	 35 (44.9%) 43 (55.1%)	 10 (55.6%) 8 (44.4%)	 9 (64.3%) 5 (35.7%)	 54(49.1%) 56(50.9%)	0.34
2. **Family history Of FS**	30 (38.5%)	10 (55.6%)	8 (57.1%)	48(43.6%)	0.231
3.**Family history of epilepsy**	7 (9.0%)	0 (0%)	3 (21.4%)	10 (9.1%)	0.112

Table 3: family history of FS in cases with younger age of initial attack (≤12 months) & their relation with recurrent attacks.

Family history of FS	2nd attack	>2 attacks	Total	P- value
Yes	9 (36%)	6 (24%)	15 (60%)	0.03
No	6 (24%)	4 (16%)	10 (40%)	
Total	15 (60%)	10 (40%)	25 100%)	

Table 4: duration of fever before the attack of febrile seizure with its effect on frequency of attacks.

Duration of fever (hours)	1attack	2attack	>2 attacks	Total	P-value
1-6	10 (13.2%)	5 (27.8%)	6(37.5%)	21(19.1%)	0.023
7-12	26 (34.2%)	2(11.1%)	1(6.3%)	29 (26.4%)	
13-24	12(15.8%)	3(16.7%)	0(0%)	15 (13.6%)	
>24	28 (36.8%)	8(44.4%)	9(56.3%)	45 (40.9%)	
Total	76 (100%)	18(100%)	16(100%)	110(100%)	

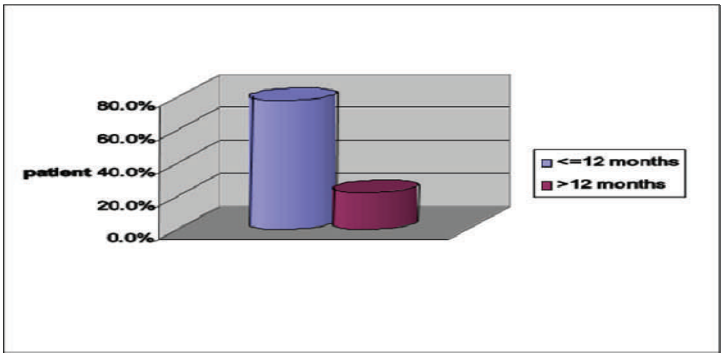

Figure (1) showed that about 78.2 % of cases who presented with recurrent attack had history of first febrile seizure at 1year old of age or younger (p-value =0.000).

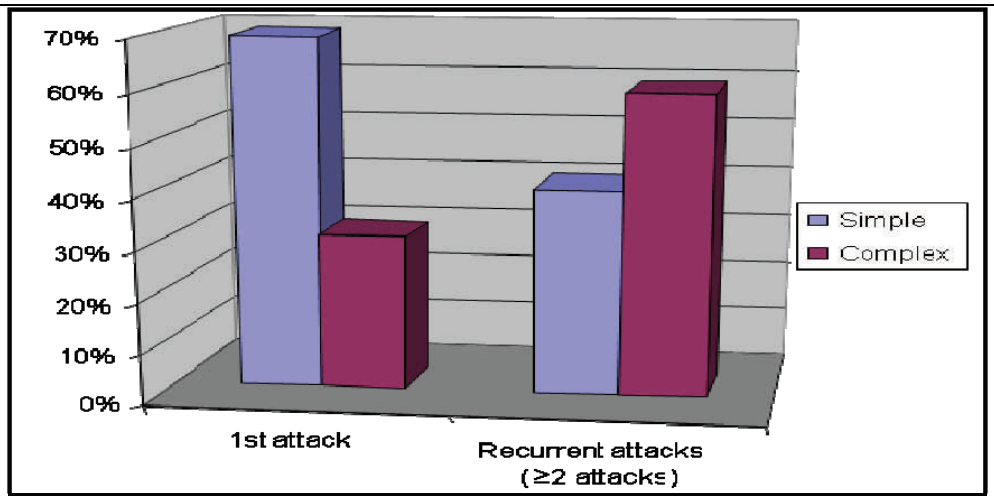

Figure 2: types of febrile seizure in both 1st & recurrent attacks.

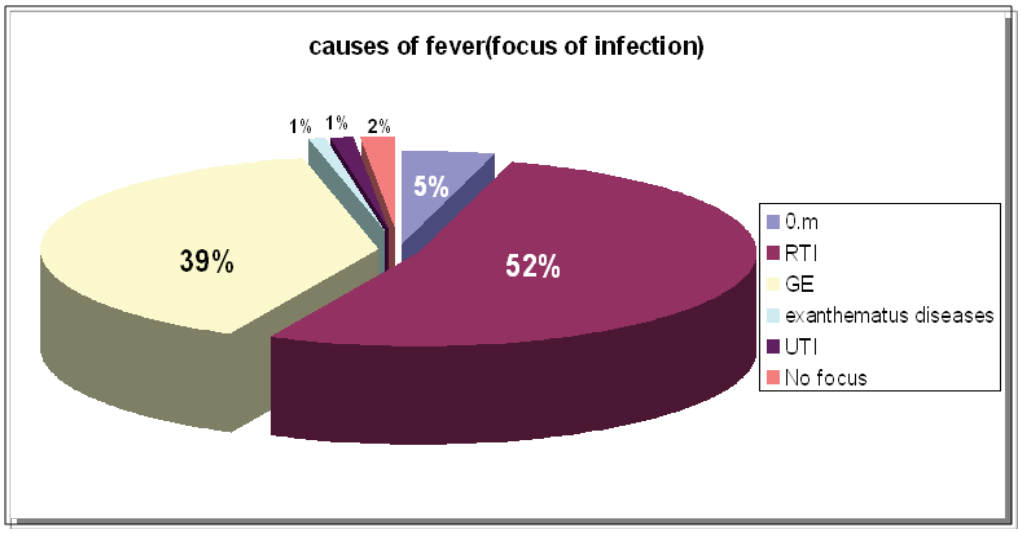

Figure 3: Causes of fever (focus of infection) in febrile seizure.

Simple FS were more common in those cases with 1st attack of FS (69.2%), while complex FS were common (59.4%) in those with recurrent attacks (p-value= 0.009) as shown in (Figure 2).

DISCUSSION:

In this study 110 cases were studied, their age were between 6months – 72 months, most cases were under 2 years of age, mainly between 1-2 years of age, this coincide with Chan et al[3] in which 52% patients had seizure onset below 2 years of age. It has been reported that the younger age at the first FS is associated with the incidence of recurrence, about 78.2 % of cases who presented with recurrent attack had history of first febrile seizure at 1year old of age or younger , similar findings were demonstrated by Al-Zwaini [9]. It was suggested that male is a risk factor for recurrence[3, 9].In this study male gender was predominant among those with recurrent attacks with male to female ratio was 1.4:1. In this study only (19.1%) had fever for 1-6 hours and about 52.4% of them developed more than 1 attack of febrile seizure during the same illness, Al-Ossaimi [10] which mention that shorter duration of fever is risky for further

were common (59.4%) in those with recurrent attacks, this is disagree with Chan et al [3] which founded that simple FS were more common in both 1st & recurrent attacks & this may be due to that our age limit was wider than that included by Chan et al[1].This study showed most of cases with recurrent FS had positive family history of febrile seizure (about 56.3% of cases) as shown in many studies [3,5,11]. In this study only (9.1%) had family history of epilepsy, (60%) of them developed frequent attacks of seizure during the same illness (complex seizure), this agree with Al -Eissa et al [12] which found that history of FS and epilepsy in parents or siblings was marginally more common among children with complex FS than those with simple FS. RTI founded to be the most common precipitating factor for FS & gastroenteritis as the second common precipitating factor. this is in agreement with Chan et al [3]; which reveal that RTI account for 50.9% but it disagree with this study about GE as 2nd common cause, in this point it coincide with Omeran et al [13] in which gastroenteritis account for 27.3% & this is depend on the season in which the study is undertaken.

CONCLUSIONS:

younger age (≤12 months) of the initial febrile seizure was highly significant risk factor for recurrent febrile seizures in the future. Also male gender & Cases with positive family history of febrile seizure in 1st degree relatives are risky for developing recurrent attacks & those with complex febrile seizure tend to recur. Short duration of fever before developing febrile seizure (<6hours) has risk of frequent attacks during the same illness.

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