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RESEARCH ARTICLE

CONVULSIONS AMONG CHILDREN AGED 6 MONTHS -7 YEARS

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ABSTRACT

This study was carried out to investigate the causes of convulsions With in age group 6 M-7 years & to estimate the characters of patients with febrile convulsion. The study was done in AL-khansa – Teaching Hospital, pediatrics department in Mosul during the period 1/2/2018-1/6/2018. Data on age, sex convulsion & its duration, character, clinical presentation & family history of F.C., examination of children for any neurological abnormality, delayed developmental milestones & family history for epilepsy. Also the education of the mother in considered because has important role to prevent recurrence of convulsion. The study was showed that the F.C formed abut (60) (77.9%), epilepsy & C.P (7.8%), uremia (2.6%), hypocalcaemia (2.6%). The F.C was most common among the age group l >11-23 months, the males slightly predominant than females with 1.5:1 ratio. Most of the convulsion were of simple types. All cases have generalized tonic clonic mode of convulsions except 3 (5%) who presented with focal type. Positive family history of convulsions was found in (15) (25%) of cases. Positive family history of epilepsy was seen in (4)(3.3%) of F.C., delayed developmental milestone was seen in (2)(3.3%) of cases. The comparison between the complex and simple F.C there was significant difference (P-value< 0.05) in the age group 6-35 month, while there were no significant difference according to EEG finding, family history, and delayed development of milestones. According we recommend early intervention by the family to avoid the occurrence of F.C as well as improve the educational level of the mothers

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INTRODUCTION

Seizures are a common neurological disorder in the pediatric age group & occur in 3-5% of children (Hirtz, 1997). The term seizure & convulsion my be incorrectly used interchangeably with epilepsy. A seizure (convulsion) is defined as paroxysmal involuntary disturbance of brain function that may be manifested as an impairment or loss of consciousness, abnormal motor activity, behavioral abnormality, sensory disturbance, or autonomic dysfunction Some seizures are characterized by abnormal movements without loss impairment of consciousness (Haslan, 2000). Epilepsy is defined as recurrent–seizures unrelated to fever or to an acute cerebral insult (Haslan, 2000). Different diseases may produce convulsion in children. Identifying the natural history of convulsion creates a problem as the diagnosis of its causes in delayed until the condition has established itself clearly. Deciding whether convulsion in young children are due to febrile or non febrile causes can by very difficult. The National Child Development Study in England showed that a possible cause is found in 27% of children less then 11 years of age suffering from convulsion but for the majority there is no obvious reason. Febrile convulsion are the most common convulsive disorder in young children (Hirtz, 1997; Haslan, 2002). In the later in fancy & early the most frequent causes. Other less frequent cases include tetany, Idiopathic convulsion, hypoglycemia brain tumors, renal insufficiency & poisoning (Haslan, 2000). As defined according 1980 National Institutes of Health Consensus Conference febrile seizure is ‘‘ An event in infancy or early children usually occurring between 3 months & 5 years of age associated with fever but without evidence of intracranial infection or defined cause (Hirtz, 1997; Haslan, 2000). Febrile convulsion should be differentiated from epilepsy that is triggered by fever (Haslan, 2000).

Aim and objectives: The aim of the study is to the main causes of convulsion among the sample and the main predisposing factors. The objectives are: 1- To demonstrate the main causes of convulsion within the age group 6 months – 7 years 2- To demonstrate the age distribution of F.C. among the sample as well as the six difference. 3- To identify the clinical criteria of F,.C.. 4- To study the relation of maternal education to F.C. 5- compare the simple and complex F.C.

PATINTS AND METHOD

The present study included 77 children aged 6 months- 7 years who presented to AL-khansa – Teaching Hospital, pediatrics department in Mosul during the period 1/2/2018-1/6/2018.

Each patient was studied for the following criteria's: age, sex, the convulsive attack, its duration, types and for the presence or absence of F.C in the family. Full clinical examination of each child was performed including, vital sings like temperature, pulse rate & respiratory rate, the precipitating factors for F.C as : signs of (URTI); otitis media, pharyngitis, tonsillitis, adenitis. Pneumonia, gastroenteritis, urinary tract infection, influenza, Roseola infantum. As well as neuorlogical examination for any abnormality on admission and thereafter, like todd's paralysis. Gross motor development was only considered in the assessment of miles. A variety of investigation were done according to the provisional diagnosis for e.g lumber puncture to obtain C.S.F. was performed, as well as serum calcium, blood sugar, blood urea, serum creatinine, G.S.E, stool culture G.U.E., urine culture, CXR.EEG was performed two weeks following discharge from hospital. EEG was done 22 patients only and the reminders were refused the follow up. Patients were considered as febrile convulsors depending on the history and CSF examination. F.C. are precipitated by a rapid rise in body temperature issuing from any cause and involves children between the ages of 6 months – 7years.Simple F.C. was considered when it occurs within hours of the onset of fever, is brief < 15 min, single does not have focal features and does not occur more than once in 24 hours period. Complex F.C. was considered when it is prolonged, multiple, or focal[4]. F.C. is associated with rapidly rising temperature & usually develops when the core temperature reaches 39^{o}C or greater. The seizure is typically generalize, tonic- clonic of few seconds to 15 min. duration, followed by a brief postictal period of drowsiness[1,2]. Education of the mothers was studied as well according to classification of education.

RESULTS

The causes of convulsion are demonstrated in the (table1). The most common cause of convulsion was F.C (60)(77.9%), followed by meningitis (6)(7.8%)& equel no.of epilepsy associated with C.P(6)(7.8%), while convulsion dueto hypocalcemi & uremia was (2)(2.6%) for each one.

Table 1. Causes of convulsion within age group 6 month -7 years

Causes of convulsion	No. of patients	% of cases
F.C.	60	77.9
Epilepsy +C.P.	6	7.8
Meningitis	6	7.8
Uremia	2	2.6
Hypocalcemia	2	2.6
Hypocalcemia	2	1.3
Toral	77	100

Table 2. Age distribution foe febrile convulsion

Age group (month)	No. of patients	% of cases
6-11	7	11.7
>11-23	27	45
>23-35	18	30
>35-59	6	10
>59	2	3.3
Total	60	100

Table 3. Sex distribution for febrile convulsion

Sex	No. of patients	% of cases
Male	36	60
Female	24	40
Total	60	100

Table 4. The duration of seizers (F.C)

Clinical characteristics	No. of patients	% of cases
Duration of seizers	52	86.7
>15 min	8	13.3
Total	60	100

Table 5. Types of seizures (F.C)

Types of seizures	No. of patients	% of cases
Generalized	57	95
Focal	3	5
Total	60	100

Table 6. Family history for febrile convulsion

Family history	No. of patients	%of cases
Positive	15	25
Negative	45	75
Total	60	100

Table 7. The first and repeated attacks in febrile convulsion

The attack	No. of patients	% of cases
First attack	35	58.3
Repeated attack	25	41.7
Total	60	100

Table 8. Family history for epilepsy

Family history for epilepsy	No. of patients	% of cases
Positive	4	6.7
Negative	56	93.3
Total	60	100

Table 9. The precipitating factors for febrile convulsion

Precipitating factors	No. of patients	% of cases
U.R.T.I.	42	70
Pneumonia	11	18.3
G.E	3	5
U.T.I.	1	5
Unknown	3	5
Total	60	100

Table 10. The education of the mothers

Education	No. of patients	% of cases
Not reading and writing	30	50
Reading and writing	16	26.6
Primary school	12	20
Secondary	0	0
High education	2	3.4
Total	60	100

The lesser cause of convulsion in this study was dueto hypoglycemia (1) (1.3%) Age disterbution F.C was demonstrated in the (table2). Among the age group >11-23 months & next to it was the age group >23-35 months, while the least was among the age group >59 months. Sex distribution of F.C. was demonstrated in the (Table3). In this study there was predominance of male where 60% of patients were male while 40% were female. The male: female ratio was 1.5:1. The duration of seizure was less than 15 min. in 86.7% of patients while in 13.3% of patients the duration was more than 15 min. 1/6.5 of cases was found to have complex type (prolonged to last longer then 15 min, multiple % occur within 24 hours or are focal or have post focal paresis) as shown in (Table 4).

Table 11. Comparison between the simple and complex febrile convulsion

		Simple F.C.		Complex F.C.				
	Age in Months	No. of cases	% of cases	No. of cases	% of cases	Total		P- Value
Age	6-23	32	53.3	2	3.3			significant
	>23-35	13	21	5	83			
	>35	7	11.7	1	1.1	60	100	Not significant
Delayed develop-ment	Normal	51	85	7	11..7			=
	Abnormal	1	1.6	1	1.7	60	100	
EEG*	Normal	18	30	3	5			=
	Abnormal	0	0	1	1.6			
Family History	Positive	13	21.7	2	3.3			=
	Negative	39	65	6	10	60	100	

*EEG was done for 22cases only

The type of seizure (character) was generalized tonic – clonic in 95% of cases, while 5% of cases was focal in type as shown in (Table5). Family history of F.C. in sibling & parents was in 25% of cases (15patients) as shown in (table 6). The patients presented with first attack of F.C. were (35) 58.3% while those who presented with repeated attack were (25) 41.7% as demonstrated in (Table 7). (Table 8) demonstrate that (4)(6.7%) of F.C. have positive family history of epilepsy. The precipitating factors for F.C. as demonstrated in (Table9) frequent precipitating factors was U.R.T.I. 70% of cases while the U.T.I. was least precipitating factors and 5% of cases was of unknown aetiological factor as much as the investigations performed. The education of patient's mothers with F.C. is demonstrated in (Table10), 50% of mother of patients with F.C. was not reading and writing while 3.4% of high education. The (table 11) showed the comparison between the simple and complex F.C. according to certain variable there was significant difference in age group 6-23 months where the simple F.C. case was (32)(53.3%) from (52) cases compared with complex F.C. cases (2)(33.3%) from (8) cases. Also there was significant difference (p-value < 0.05) in the age group >23-35 months, where the simple F.C. cases were (13)(21.7%) compared with complex F.C. cases (5)(8.3%). While there is no significant difference (p-value not significant) in the age group >35 months. Regarding the EEG finding, family history and delayed development of gross motor there was no significant difference (p- value not significant).

DISCUSSION

The study showed that 77.9% of convulsion was febrile in nature. Other study was done by Al-Ne-ema & found that F.C. constitute more then 50% of convulsive cases in under 5years age group. The study showed that 45% of cases of F.C. were found among age group > 11-23 months. Other studies they found that the most common age group is in the 2nd year of life (Hirtz, 1997; Painter, 1998; Farwell, 1991). The sex distribution for F.C. in this study showed that male more predominance than female by 20% &the sex ratio of male of female was 1.5:1.

This finding was shown in other studies, they found that they are slightly more common in males than females (Hirtz, 1997; Brown, 1992; Farwell, 1991). Frequent studies was found that the boys are more commonly affected then girls. Some of these studies have attributed this phenomenon to the frequent exposures of males to head traumas (Al-Ne'ema, 1991). The most common frequent type of F.C. in this study was simple. This finding is similar to that noted by studies (Farwell, 1991; Al-Ne'ema, 1991). Nearly one sixth of the cases were found to have complex type. Several large prospective studies have determined that in approximately 20% of cases the first F.C. was complex (Hirtz, 1997).

All the cases were found to have generalized tonic – clonic mode of seizure except 3 which was found to have focal type. This study is similar to that reported by other studies, a clinical study of 303 patients. there was predominance of tonic clonic convulsion (85.5%) (Farwell, 1991). Positive family history of F.C. was found in 25% of cases. Many other studies reported that positive family history was found in 30% of cases (Goodride, 1987; Brown, 1992; Farwell, 1991; Al-Ne'ema, 1991). The recurrence in this study was found in 58.3%of cases. The younger the child at the 1st F.C. the more likely is a recurrence (Hirtz, 1997). 50% of those children whose first F.C. occur under the age of one year will have at least one recurrence, were as only 20% of those who have their first F.C. after the age of 3 years will have recurrence (Hirtz, 1997; Haslan, 2000). Positive family history of epilepsy was found (Goodride, 1987) (6%) of F.C.. Many other studies reported that positive family history for epilepsy was found nearly in 5% & all types of epilepsy including absence, generalized tonic clonic & complex partial S can be seen in patient who have history of F.C (Hirtz, 1997). Presence of delayed developmental milestones was found in 3.3% patients with F.C... It has been reported that some cases of febrile convulsors who have delayed developmental milestones are more liable for development of epilepsy (Hirtz, 1997; Haslan, 2000). The incidence of epilepsy is approximately 9% when several risk factors are present, compared with an incidence of 1% in children who have F.C. & no risk factors (Haslan, 2000). The comparison between simple and complex F.C., this study showed there was significant difference (p- value < 0.05) in the age group 6-35 months while there was no significant difference in the age group > 35 months (p- value not significant), also there was on significant difference according to EEG finding, family history and delayed development of milestones. The most probable cause of insignificant between the simple and complex F.C. was the small of sample.

Conclusion

- F.C. was most common cause of convulsion among age group 6 months – 7 years (77.9%)
- F.C. is more frequently found among children with age group > 11-23 month (45%).
- The males slightly predominant than females (60%).
- Most of F.C. in this study was simple type (95%).
- The frequent precipitating factor for F.C. was U.R.T.I. (70%).
- About half of cases has repeated attacks of F.C..
- Positive family history of F.C. was found to be important in the possibility of occurrence of F.C.
- There was significant between simple and complex F.C. in the age group 6-35 months as well as EEG finding, family history and delayed development of milestones.

Recommendations

By the end of this study I recommend the following to the family:

- Avoid febrile illness to prevent occurrence of F.C..
- Families with positive history of convulsion should be aware about the risk of and the first aid treatment of F.C.
- Improve the educational level of the mothers about the prevention of F.C.

To the health personal

- Control of febrile illness.
- Recognition of the risk group of febrile convulsors for close follow up &early intervention.

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