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Original Research Article

A retrospective study of febrile seizures among children admitted in a tertiary care hospital

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ABSTRACT

Background: Convulsion is the most common neurologic finding in children (10%). Prevention of febrile convulsions is therefore desirable, and is of particular relevance in children with factors carrying a high risk of recurrence. Aim and Objectives were to study the demographic profile and some risk factors of febrile seizures among children.
Methods: A record based descriptive cross-sectional study was conducted at paediatric department of Dr. S.C.GMC, Nanded. Considering inclusion & exclusion criteria all children in the 6 month to 6 year age who were diagnosed as having febrile convulsion admitted during January to December 2015 were included in the study.
Results: Of the 288 children 173 (60.1%) were boys and 115 (39.9%) were girls. 46.9% children were in the 1-3 year age group. Mean age of occurrence was 2.8 years (±1.5 years). In this study, 80.2% (231) of the patients had simple and 19.8% (57) had the complex form of febrile seizure. In our study, 51.73% (149) of affected children had positive family history of febrile seizure. URTI (9.7%) followed by AGE (7.3%) was the most common co-morbidity. 54.2% children were hospitalized for 1-3 days.
Conclusions: Most of the children had a positive family history and the most common causative factor was URTI, LRTI, AGE etc. are associated with febrile convulsion and these diseases can be managed effectively thereby reducing the occurrence of febrile convulsion.

Keywords: Acute gastroenteritis, Upper respiratory tract infection, Lower respiratory tract infection

INTRODUCTION

Convulsion is the most common neurologic finding in children (10%).[1] Febrile convulsion is also the commonest seizure disorder in children.[2] It occurs in 2 to 4 percent of children at least once before five years of age.[3] In some studies it affects 24% of children before age 5 years.[4] Febrile seizure affects 2-5% of all children across the world. It rarely affect children before the age of 6 months or after 3 years of age.[5] Some data also reports that one in every 25 children in the population will experience at least one episode during their childhood.[6] In Europe, its incidence is between 2 and 5 years, 30% of children have a second episode and 15% have more recurrences.[7]

The International League Against Epilepsy has defined that seizures in childhood is with temperatures over 38°C without evidence of acute electrolyte imbalances and CNS infection or history of febrile convulsion.[5] It is characterised by loss of consciousness, involuntary movements of limbs on both sides of the body. In most of the cases it occurs during the first day of fever.[6]

The febrile seizures observed as simple and complex febrile seizures.[1] The simple type is characterized by an

episode of generalized tonic-clonic seizure lasting less than 15 min in 24 hours while in the complex type the convulsions are multiple, lasting more than 15 min. Majority (70%-75%) of them are of simple type.[5]

A positive family history for febrile seizure observed in 25-40% of the patients.[5] A first degree- family history is a major risk factor for the recurrence.[7] In such cases, the recurrence risk is increased up to 80%.[8]

The most important causes are fever, hypoglycaemia, hypocalcaemia, head injury, poisoning and drug overuse, respiratory infection or gastroenteritis, the mothers' disease during pregnancy, prematurity, and delivery complications.[1,5] The overall recurrence rate is 30%. Predictors of recurrence are complex seizures, positive family history, onset at less than 12 months, temperature <40°C and the presence of associated complex features of febrile convulsions.[5,9]

Hospital based studies have reported a high incidence of febrile convulsion(40%).In contrast, population based studies shows incidences of 2% and 3-5% in two large American studies.[10] Although there are lot of literature available in last 25 years which shows good prognosis in most of the cases of febrile seizures, but there are also reports which highlighted the risk of epilepsy (9%) as its complication.[1] So we conducted this study to know the demographic profile and some risk factors of febrile seizures among children.

Aim and objectives

To study the demographic profile and some risk factors of febrile seizures among children.

METHODS

A record based descriptive cross-sectional study was conducted at paediatric department of Dr. S.C.GMC, Nanded. IPD register and case papers of patient admitted in last one year was used for data collection. Considering inclusion & exclusion criteria all children in the 6 month to 6 year age who were diagnosed as having febrile convulsion admitted during January 2015 to December 2015 were included in the study. Total 288 children were studied for various demographic characteristics and some risk factors of febrile seizures.

Inclusion criteria

All patients of age group between 6 months to 6 year and diagnosed as febrile seizure were included in the study.

Exclusion criteria

All other seizure disorder patients excluding febrile seizure were excluded from study. Also patient age less than 6 months and more than 6 year were excluded from study.

The data was entered in excel sheet of Microsoft Excel 2013 version and analysed by Epi Info 7 version (Atlanta, Georgia, USA) for mean, standard deviation and chi square test. Vancouver system of citing and listing the reference was used.

RESULTS

Of the 288 children 173 (60.1%) were boys and 115 (39.9%) were girls. There were significant differences in gender numerically but not statistically. 62 (21.5%) were in below 1 years of age, 135 (46.9%) were in 2-3 years of age and 91 (36.6%) were in 4-6 years of age.

Mean age of occurrence was 2.8 years (±1.5 years). The mean age for male and female were 25.62±15 and 25.13±16.11 months, respectively (p=0.81). Mode for age was 2 years. The median age of children admitted with seizures was 2 years. The median number of seizures in an individual child was 2. In this study, 80.2% (231) of the patients had simple and 19.8% (57) had the complex form of febrile seizure. In our study, 51.73% (149) of affected children had positive family history of febrile seizure. But 48.27% didn't have any family history of febrile seizures. 52.1% were from rural area and 47.9% were from urban area, there is no statistically significant difference between occurrence of febrile convulsion among rural and urban children.

Tables 1: Demographic and clinical profile of children.

Gender		Male	Female	Total	X^2	P value
Age (in years)	1	35 (56.5%)	27 (43.5%)	62 (21.5%)	1.9	0.37
	2–3	78 (57.8%)	57 (42.2%)	135 (46.9%)		
	4–6	60 (65.9%)	31 (34.1%)	91 (36.6%)		
		173 (60.1%)	115 (39.9%)	288 (100%)		
Mean body temperature		38.31±0.82	38.04±1.78	38.2±1.32		0.15
Family history	Yes	90	59	149 (51.73%)	0.014	0.90
	No	83	56	139 (48.27%)		
		173 (60.1%)	115 (39.9%)	288 (100%)		
Type of febrile seizure	Simple	138	93	231 (80.2%)	0.052	0.81
	Complex	35	22	57 (19.8%)		
		173 (60.1%)	115 (39.9%)	288 (100%)		

Continued.

Gender		Male	Female	Total	X^2	P value
Type of seizure	Generalised tonic-clonic seizure	120	81	201 (69.9%)	0.415	0.98
	Partial	34	23	57 (19.8%)		
	Absence	5	3	8 (2.7%)		
	myoclonic	3	1	4 (1.3%)		
	Tonic & atonic	11	7	18 (6.4%)		
		173 (60.1%)	115 (39.9%)	288 (100%)		
Residence	Urban	84 (56%)	66 (44%)	150 (52.1%)	2.16	0.14
	Rural	89 (64.5%)	49 (35.5%)	138 (47.9%)		
		173 (60.1%)	115 (39.9%)	288		
Infection	URTI	17 (9.8%)	11 (9.6%)	28 (9.7%)	1.74	0.88
	LRTI	10 (5.8%)	9 (7.8%)	19 (6.5%)		
	AGE	12 (6.9%)	9 (7.8%)	21 (7.3%)		
	Malaria	9 (5.2%)	7 (6.1%)	16 (5.5%)		
	Others	9 (5.2%)	3 (2.6%)	12 (4.2%)		
	No infections	116 (67.1%)	76 (66.1%)	192 (66.7%)		
		173 (60.1%)	15 (39.9%)	288 (100%)		
Hospitalization stay	1-3	93 (59.6%)	63 (40.4%)	156 (54.2%)	1.9	0.37
	4-7	51 (60.1%)	34 (40.1%)	85 (29.5%)		
	>7	29 (61.7%)	18 (38.3%)	47 (16.3%)		
		173 (60.1%)	115 (39.9%)	288 (100%)		

URTI (9.7%) followed by AGE (7.3%) was the most common co-morbidity. 54.2% children were hospitalized for 1-3 days, 29.5% for 4-7 days & 16.3% for more than 7 days. Of the patients with complex febrile seizure, 59% had the repetitive type, eight cases 20.5% had the focal type, and eight cases had more than 15 minutes duration of febrile seizures. Study results did not show significant difference between two genders for simple or complex seizures. The mean body temperature upon admission was 38.2±1.32 degrees centigrade that was 38.31±0.82 degrees centigrade in boys and 38.04±1.78 degrees centigrade in girls (p=0.15). Generalized tonic- clonic seizures were the commonest seizure type in this study (69.9%). These were followed by partial seizure (19.8%), absence (2.7%), and myoclonic 7 (1.3%). Other seizures types including tonic, atonic comprised remaining (6.4%) of cases. Status epileptics was present in (7.3%) of children.

DISCUSSION

Febrile seizure is the most common seizure in childhood. Occurring in 2-7% of the children aged 6 months to 6 years.[11] In this study, the mean age of the patients was 2.8 years ±1.5 years, but in some studies, 23.68 months was the approximate estimated age.[12,13]

In this study, 173 cases with febrile seizure were boys (60.1%) and the remainder 115 were girls (39.9%). A definite male predominance was detected for febrile seizure in our study. This is also supported by a study performed by Khanian et al in 2010, that quoted a slight predominance of febrile seizure in males. Mahyar et al in 2010 found that gender is an important factor in febrile seizure; in his study, 66% of the infants with febrile seizure were boys.[14]

In this study, 80.2% of the patients had simple and 19.8% had the complex form of febrile seizure. This was also stated by Hosseini Nasab et al. In his study on 460 infants with febrile seizure, simple and complex form of febrile seizure were 76.4% and 23.6%, respectively. [15]

In our study, 51.73% (149/288) of affected children had positive family history of febrile seizure. In other studies, performed in Boushehr (59%), Kashan (55%) and Kerman (50%), positive family history was identified as most remarkable risk factor in these children.[15-17]

In the present study, upper respiratory tract infection was the main reason of febrile seizure in URTI (9.7%) of the cases and AGE (7.3%) was the second cause of fever. URI was the most important cause of fever in other studies.[15,18]

CONCLUSION

Most of the children had a positive family history and the most common causative factor was upper respiratory infections-morbidities/risk factors in the form of URTI, LRTI, AGE etc. are associated with febrile convulsion and these diseases can be managed effectively thereby reducing the occurrence of febrile convulsion.

Recommendations

Repeated febrile convulsions make a severe fit with the accompanying possibility of neurological damage more

likely. So prevention of febrile convulsions is therefore desirable, and is of particular relevance in children with factors carrying a high risk of recurrence.

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