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Research Article

Febrile convulsions in preschool children Kashmir India

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ABSTRACT

Background: Febrile convulsions are the most common cause of convulsions in children under five years of age. Objective of current study was to know the incidence, age and sex distribution of febrile convulsions in preschool children Kashmir India.
Methods: A prospective hospital based study, carried out in the Department of Pediatrics, G.B. Pant Hospital, Government Medical College and Research Institute, Srinagar India from 1 July 2009 to 30 June 2010. All the hospitalized sick children who had febrile convulsions in the age group 1 month to 6 years of the age between 1 July 2009 to 30 June 2010. All children with febrile convulsions in the age group 1 month to 6 years were enrolled in this study. Variables recorded were demographics, clinical presentation, laboratory tests, and diagnosis and hospital course.
Results: A total of 897 children in the age group 1 month to 6 years were admitted for recent seizures. Among these patients 545 (60.7%) had febrile convulsions. Among Febrile convulsions, 379 had typical febrile convulsion and 166 atypical febrile convulsions. Febrile convulsions were more common in males (308) than females (237). Febrile convulsions were more common in first three years of life.
Conclusions: Febrile convulsions were the commonest cause of convulsions in children under five years of age and majority of them occurred in first two years of life. Typical febrile convulsion were common than atypical febrile convulsions.

Keywords: Febrile convulsions, Typical febrile convulsions, Atypical febrile convulsions, Kashmir India

INTRODUCTION

Febrile convulsions are the most common seizure disorders in childhood and generally have excellent prognosis.[1-3] The febrile seizure is defined as seizure during fever, between 6 months to 6 years of age in absence of intracranial infection or previous unprovoked seizure.[4,5] Another definition from the International League Against Epilepsy (ILAE) is "a seizure occurring in childhood after 1 month of age up to 6 years, associated with a febrile illness not caused by an infection of the Central Nervous System (CNS), without previous neonatal seizures or a previous unprovoked seizure, and not meeting the criteria for other acute symptomatic seizures".[6,7] Febrile seizures are divided into 2 types: simple febrile seizures (which are generalized, last <15 min and do not recur within 24 h) and complex febrile seizures (which are prolonged, recur more than once in 24 h, or are focal). Complex febrile seizures are prolonged (greater than 15 min), focal or multiple (recurrent within same febrile illness over 24 h period).[7,8]

Febrile seizures occur in 2-5% of children aged 6 months to 5 years in industrialized countries.[9] Among children with febrile seizures, about 70-75% has only simple febrile seizures, another 25-30% has complex febrile

seizures, and about 5% have symptomatic seizures.[9] In United States between 2% and 5% of children have febrile seizures by their fifth birthday.[10] A similar rate of febrile seizures is found in Western Europe.[10] The incidence elsewhere in the world varies between 5% and 10% for India, 8.8% for Japan, 14% for Guam, 0.35% for Hong Kong, and 0.5-1.5% for China.[11] Variation in prevalence relates to differences in case definitions, ascertainment methods, geographical variation, and cultural factors.[11] Males have a slightly (but definite) higher incidence of febrile seizures.[11]

METHODS

This study was conducted in the postgraduate department of pediatrics, G.B Pant Hospital, an associated hospital of the Government Medical College Srinagar North India. The hospital is referral tertiary care hospital housing department of pediatrics. It was hospital based prospective non-randomized study conducted from 1 July 2009 to 30 June 2010. Participants were all sick children with history of recent seizure in the age group 1 month to 6 year of the age. In this study lumbar puncture was not done as a routine investigation and it was performed on clinical suspicion of meningitis. Irritability, bulging fontanel, neck stiffness, positive Kerning's sign, drowsiness, prolonged focal seizure, multiple seizures, petechial rash were considered signs of meningitis and lumbar puncture was performed. When lumbar puncture was not performed patients were kept under observation and reviewed within few hours and if child deteriorated lumbar puncture was performed. Types of investigations were decided on the basis of physical examination and history.

Excluded from the study were all with acute symptomatic seizures and unprovoked seizure, develop-mentally abnormal children and children below one month or above six years of age.

RESULTS

A total of 12012 children in the age group 1 month to six years were admitted to hospital. Among them 6226 were males and 5786 female. Febrile convulsions were diagnosed in 545/12012 (4.54%) cases. Out of 545 children 308 (56%) were males and 237 (54%) females. Typical febrile convulsions were seen in 379/545 (69.5%) and atypical febrile convulsions in 166/545 (30.5%) cases. Febrile convulsions were more common in first three years of life.

Table 1: Gender distribution of febrile convulsions.

Type of convulsion	Male	Female	Total
Typical febrile convulsion	224	155	379/545 (69.5%)
Atypical febrile convulsion	84	82	166/545 (30.5%)
	308	237	545

The above table depicts that typical febrile convulsions (69.5%) are more common than atypical febrile convulsions (30.5%)

Table 2: Sex specific and cumulative incidence of febrile convulsions.

Sex	Cases	Sex specific and cumulative incidence	P value	Odds ratio	RR
Male	308 (56.5%)	5.0%	0.03	1.219	1.21
Female	237 (43.5%)	4.0%			
Total	545	4.5%			

The above table depicts that febrile convulsions are more common in males (56.5%) than females (43.5%)

Table 3: Age distribution of febrile convulsions.

	1 month to 3 years	3 to 6 years	Total
Males	182	126	308
Females	151	86	237
	333/545 (61.0%)	212/545 (39.0%)	545

The above table depicts that febrile convulsions are more common in less than 3 years of age (61.0%) than more than 3 years of age (39.0)

DISCUSSION

Our study revealed that the cumulative incidence of febrile convulsions is 4.54% and are more common in males than females with male to female ratio of 1.3:1. Our results were consistent with studies done by Forsgren et al.[12] and Wei Ling Lee et al.[13] Which showed the cumulative incidence of febrile convulsions by age of 6 years was 4.47%; 5.15% in males; 3.76% in females. Alexander KC et al.,[1] revealed that febrile seizures are the most frequent of seizure disorders in childhood. Shinar S et al.[14] revealed that febrile seizures are most common of childhood seizures, occurring in 2 to 5% of children in United States. But the estimates of frequency of febrile convulsions are much higher in Japan about 8% as shown by Takayuki Tsuboi[15] and Mariana islands about 15% as shown by Stanhope JM et al.[11] The gross difference in incidence rates is suggesting importance of racial and genetic factors for febrile convulsions. Our study shows that there is no significant difference in cumulative incidence of febrile seizures between four ethnic groups; Chinese, Malays, Indians and Kashmir's, as is also revealed by Wei Ling Lee et al.[13] The age and sex specific cumulative incidence was as follows: Chinese males: 5.2%, Chinese females: 4.0%: Malay males: 5.0%, Malay females: 3.0%; Indian males: 5.2%, Indian females; 3.3%. The rates were significantly higher in males compared to females in all three races.

Our study revealed that high rate of febrile convulsions in males than females 5% vs. 4.1% with male to female ratio of 1.3:1; this is consistent to Forsgren L et al.[3] The higher incidence of febrile convulsions in males compared to females has been also found in Chinese, Malay, and Indians and is in accordance with previous studies as shown by Wei et al.[4]

Table 4: Race and sex specific cumulative incidence of febrile seizures by 6 years, and p value for differences between sexes.

Race	Both sexes	Males	Females	P value
All races	4.47%	5.14%	3.75%	<0.000001
Chinese	4.65%	5.20%	4.05%	<0.0001
Malay	4.03%	4.98%	3.01%	<0.0004
Indian	4.30%	5.19%	3.33%	<0.03
Kashmir	4.55%	5.0%	4.0%	<0.03

Our study revealed that febrile convulsions are more common before 3 years of age than 3 to 6 years of age 65% vs. 35% with median age for boys 20 months and females 22 months and is consistent with Forsgren L et al.[12] Michael V. Johnston[3] and Wei Ling et al.[13] The vast majority of patients have first febrile convulsions between age of 8 months and 3 years. This may be due to higher incidence of febrile illnesses in this age group.

Our study revealed that febrile convulsions occurred in 61% of patients and atypical occurred in 39% of patients, which is consistent with Tahir Saeed Siddiqui.[16]

In conclusion febrile seizures are the commonest seizures in children below 6 years of age, and are more common in males than females. Hence to avoid painful lumbar puncture procedure in children having convulsions associated with fever, refined protocols are needed.

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REFERENCES

1. Alexander K.C. Leung, W. Lane M. Robson. Febrile seizures. Epilepsia. 2007;21:250-5.
2. Anne T. Berg. Febrile seizures and epilepsy: the contributions of epidemiology. Paediatr Perinatal Epidemiol. 1992;6:145-52.
3. Michael V. Johnston. Seizures in childhood. In: Robert M. Kliegman, Richard E. Behrman, Hal B. Jenson, Bonita M.D. Stanton, Basil J. Zitelli, Holly W. Davis, eds. Nelson Text Book of Pediatrics. 18th ed. Philadelphia: Saunders; 2007: 2457-2470.
4. Nelson KB, Ellenberg JH. Predictors of epilepsy in children who have experienced febrile seizures. New Engl J Med. 1976;295:1029-33.
5. Sadier LG, Scheffer IE. Febrile Seizure. BMJ. 2007;334:307-11.
6. Loddenkemper T, Kellinghaus C, Wyllie E, Najm IM, Gupta A, Rosenow F. A proposal for a five-dimensional patient-oriented epilepsy classification. Epileptic Disord. 2005 Dec;7(4):308-16.
7. Luders H, Acharya J, Baumgartner C, Benbadis S, Bleasel A, Burgess R, et al. Semiological seizure classification. Epilepsia. 1998 Sep;39(9):1006-13.
8. Hauser WA. The prevalence and incidence of convulsive disorder in children. Eplepsia. 1994;35(Suppl 2):S1-6.
9. Guerrini R. Epilepsy in children. Lancet. 2006;367:499-524.
10. Offringa M, Bossuyt PM, Lubsen J, Ellenberg JH, Nelson KB, Knudsen FU, et al. Risk factors for seizure recurrence in children with febrile seizures: a pooled analysis of individual patient data from five studies. J Pediatr. 1994;124:574-84.
11. Stanhope JM, Brody JA, Brink E, Morris CE. Convulsions among the Chamorro people of Guam, Mariana Islands. II. Febrile convulsions. Am J Epidemiol. 1972 Mar;95(3):299-304.
12. Forsgren L, Sidenvall R, Blomquist HK, Heijbel J. A community-based prospective incidence study of epileptic seizures in children. Acta Pædiatrica. 1993;82:62-5.
13. Wei Ling LEE, Poh Sim, Belinda, Uma Rajan. Epidemiology of febrile seizures in Singapore children. Neurol J Southeast Asia. 1996;1:53-5.
14. Shinnar S, Glauser TA. Febrile seizures. J Child Neurol. 2002 Jan;17(Suppl 1):S44-52.
15. Takayuki Tsuboi. Epidemiology of febrile and afebrile convulsions in children in Japan. Am Acad Neurol. 1984;34:175.
16. Tahir Saeed Siddiqui. Febrile convulsion In children: Relationship of family history to type of convulsion and age of presentation. Pak Pediatr J. 2004;xii(2):73-81.

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