Original Article

Meningitis in patients presented with first episode of febrile fits

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Objective: To determine the frequency of meningitis in patients presenting with first episode of febrile fits seen at our institution.

Methodology: This cross sectional study was conducted in department of pediatric medicine Khyber teaching hospital, Peshawar from July 2017 to April 2018. Data were collected through non-probability convenient sampling technique prospectively from 120 patients. All relevant information was collected containing bio data of patients and relevant questions of interest, filled by doctor himself and analyzed by SPSS 21.

Results: Out of 120 participants, 69(57.5%) were male and 51 (42.5%) female. Mean age was 19.9±13.4 months. Highest number of patients were in age group 6 to 12 month i.e. 55 (45.8%). Simple fits were observed in 82(68.3%) patients followed by complex fits in 38(31.7%) patients. Six (5%) patients CSF was suggestive of meningitis. Significant relation was found among meningitis and complex fits (p=0.001), as all meningitis patients had complex fits. Among the total (6 cases) meningitis patients, four were in 6 to 12 month of age group while two were in 13 to 36 months (p=0.003).

Conclusion: Meningitis in patients presenting with first episode of febrile fits is more common in lower age group and those who have complex febrile fits. (Rawal Med J 202;45:616-618).

Keywords: Febrile fits, meningitis, complex fits.

INTRODUCTION

Febrile fits is most common benign seizure in pediatric age group, that is defined as fever of greater than $38c^0$ in age 5 month to 60 months in the absence of CNS infection or other known cause of seizure with no history of afebrile fits.[1] Simple febrile fits are generalized tonic with fever, for less than 15 minutes with no recurrence within 24 hours, complex one are that last for more than 15 minutes, focal and reoccur within 24 hours.[2] Fever causes fits in children during developing phase because of increased electrical activity of heated neurons by changing the ion channels activity, during this time cytokines especially interleukin 1b increases the excitability of neurons.[3]

Febrile fits are a common cause of hospital admission in pediatric age group throughout the world.[4] Mostly it is self-limited and no long term consequences.[5] Its incidence is 2-5% and round about 1-6% chances of developing epilepsy later on in life particularly with complex febrile fits.[4] For simple febrile seizure no treatment is required, but complex one that is longer than 5 minutes need abortive therapy and there is no role of prophylactic treatment.[6]

Fever with fits is a common presentation of meningitis in children and it should be included in the differential diagnosis of febrile fits because typical features of meningitis like neck stiffness, brudzinski and kerning signs are absent in children younger than 2 years of age.[7] Incidence of meningitis is higher in children who present with first episode of febrile fits.[8] Many studies showed that 6 to 8month of age group population with first episode of febrile fits were evaluated for meningitis even if they have no signs of meningitis.[9]

American Academy of Pediatrics provided very useful guidelines about the routine lumber puncture and management.[2] There is very few studies available in this regard so it will provide us data for the development of local guidelines. In Pakistan, 5% deaths are due to meningitis in less than five years of age.[10] We conducted this study in order to find the frequency of meningitis in patient who present with first episode of febrile fits in our set up.

METHODOLOGY

This cross sectional study was conducted in department of pediatric medicine Khyber teaching

hospital, Peshawar, from July 2017 to April 2018 after approval from hospital ethical committee and Informed consent was taken from all parents/guardians. Data were collected by non-probability convenient sampling technique prospectively from 120 patients. Patient from 6 to 60 months who presented with first episode of febrile fits were included in our study. Patients who had cerebral palsy, developmental delay, post meningitis sequel, partially treated meningitis, those who refused lumber puncture and those who had past history of fits were excluded from the study.

Lumbar puncture (LP) was done in all patients Patients with cerebrospinal fluid routine examination (CSF RE) showed increased neutrophils and protein while decrease in sugars were considered as patients of meningitis. All the relevant information was collected with a pre designed Performa containing bio data of patients and relevant questions of interest, filled by doctor himself.

Statistical Analysis: Data were analyzed using SPSS version 21. Mean and Standard deviation were calculated for continuous variables. $p<0.05$ was considered significant.

RESULTS

Out of 120 participants, 69(57.5%) were male and 51 (42.5%) female. Mean age was 19.9±13.4 months (range 6-60). Patients were divided into three age groups, highest frequency of patients being found in age group 6 to 12 month i.e. 55 (45.8%) (Table 1). Simple fits were observed in 82(68.3%) patients with complex fits in rest of patients.

Table 1. Age wise distribution of febrile fits and its outcome.

Variables		Number	Percentage (%)
Age (months)	6-12	55	45.8
	13-36	49	40.8
	37-60	16	13.3
Fits	Simple	82	68.3
	Complex	38	31.7

Table 2. CSF R/E details.

Glucose (mg/dl)	Protein (mg/dl)	TLC (cell/mm)	Neutrophils (%)	Lymphocytes (%)
27	90	360	90	10
12	172	470	100	0
22	99	170	72	28
17	232	110	20	80
27	110	221	100	0
22	145	89	90	10

Out of total patients, CSF of 6(5%) was suggestive of meningitis (Table 2). Significant relation was found among meningitis patients and complex fits ($p=0.001$), as all meningitis patients had complex fits. Among the total (6 cases) meningitis patients 4 cases were in 6 to 12 month of age group while 2 cases were in 13 to 36 months, which showed a significant relation between low age and meningitis ($p=0.003$).

DISCUSSION

In young patients, signs of meningeal irritation are usually absent so it is very important to identify these patient on time especially those who present with fever and fits. Moreover, there is a well-established association between fits and meningitis, with the introduction of proper immunization, frequency of meningitis is decreased in febrile children but in area where there is no established immunization it is still an important issue.[11] In our study, 5% cases were diagnosed as meningitis who presented with first episode of febrile fits. This is similar to a study from Islamabad by Krishin et al who noted meningitis was in 4.8% of patient.[9] Another study from Iran reported 4.5% patients as cases of meningitis who presented with febrile fits.[12] A US study reported 0.9% meningitis in patient of 6 to 60 month of age who presented with complex febrile fits.[11] A UK study reported 0.23% cases of meningitis in patient of febrile fits.[13] This lower incidences is most probably because of the good immunity and excellent immunization coverage in developed countries. We noted meningitis more in males (66.7%) compared to females (33.3%), as reported by Yaqub et al.[10] In our study, we found that all meningitis patient presented with complex febrile fits, as reported by Tavasoli et al.[12]

We had 55 (45.8%) patients in 6 to 12 month age group, 49(40.8%) in 13 to 36 months age group while 16(13.3%) patients in 37 to 60 month of age group. A study from Rawal institute Islamabad also revealed 44% of febrile fits patients were in age group 6 to 12 months.[14] Out of total patients who were diagnosed with meningitis, 4 patients were in 6 to 12 month of age while 2 in 13 to 36 month, similar to a study by Krishin et al.[9]

We found that 69(57.5%) children were male and 51 (42.5%) female, simple fits in 82(68.3%) patients while complex in 38(31.7%). A study by Siddiqui et al revealed male were 58% and female were 42 %.[5] Similar results were reported by Tavasoli et al.[13]

CONCLUSION

Meningitis is more common in lower age group of first episode of febrile fits with those who have complex febrile fits.

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Conflict of Interest: None declared
Rec. Date: Oct 17, 2018 Revision Rec. Date: Jul 9, 2020 Accept Date: Jul 26,2020

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