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Identification and observation clinical finding of febrile convulsion (FC) among admitted children: A study in Dhaka Shishu (Children) Hospital, Dhaka, Bangladesh

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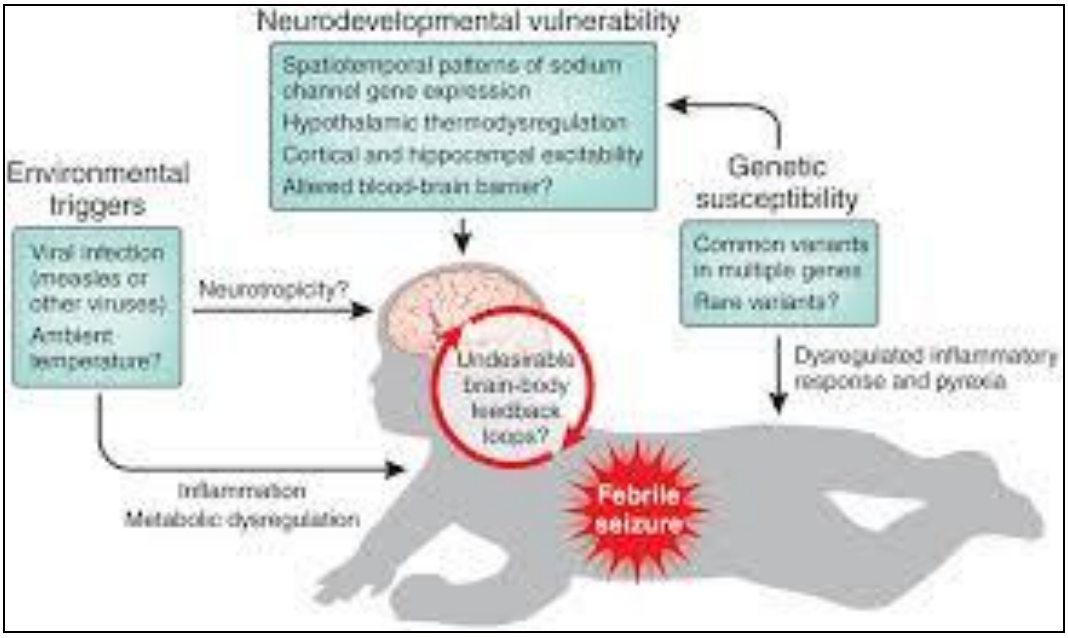
Abstract
Background: Febrile convulsion (FC) is that the commonest sort of seizure that happens in children aged 5-72 months that is benign and had an honest prognosis.
Objective: To gauges the clinical profile and management of hospitalized children with febrile convulsion.
Methodology: This cross sectional study was tired capital of Bangladesh Shishu (children) Hospital throughout July 01, 2017 to June 30, 2018. Total 80 children aged between 5-72 months were admitted in to High Dependency and Isolation Unit with diagnosing of FC were purposively recruited within the study information were collected by a trained physician from history, clinical examination, laboratory findings, treatment and outcome employing a structured form.
Results: Among the study children 41(51.3%) were between six months to twelve months with a male to feminine quantitative relation was1.5:1. cardinal (61.2%) children had easy seizures, and 16 (20%) of the patients had case history of febrile seizures. In 70 (87.5%) cases the period of seizure was but quarter-hour and seventy fifth patients had but one attack at intervals twenty four hours of onset of fever. Higher tract infection was the foremost common (31%) reason behind fever followed by unclassified in 21 (26%) cases. Complete blood count discovered blood disorder in forty ninth cases, CRP raised in half-hour cases whereas CSF study and imaging of brain was traditional in thirty cases and ten cases. We tend to couldn't perform any investigation to isolate doable contributive virus quite ninetieth per cent received endogenous broad-spectrum antibiotics and prophylactic medicine throughout period of time of hospitalization. Conclusion: during this study, higher tract infection was found as common reason behind febrile convulsion. Period of seizure was but quarter-hour and blood disorder, raised CRP was known and nearly all patients received broad-spectrum antibiotics throughout hospital keep.

Keywords: febrile convulsion, seizures, upper respiratory tract infection, leukocytosis, CRP

1. Introduction

Seizures are the most common pediatric neurological disorders. 4 to 10 % of Children suffer a minimum of one episode of seizure within the seizure in the first 16 years of life. In most studies, febrile seizures were reported to be the most common type seen in the pediatric population and account for the majority of seizures seen in children younger than 5 years of age, which accounts for about 1% of all emergency department visits, and about 2% of children's hospital emergency department visits [1]. Although most febrile seizures are brief, do not require any specific treatment or workup, and have benign prognosis, witnessing such seizures is a terrifying experience for most parents. Febrile convulsions occur in young kids once there's fast increase in their blood heat. Febrile Convulsion defined as seizures that are provoked by fever of extra cranial infective origin and occur in children aged between six months and five years [2]. It may, however, occur from four months up to six years of age [3], although onset above age 7 years is rare. Evidence suggests having a peak incidence at about 18 months of age, whether the child can be neurologically normal or abnormal [4]. Febrile convulsion may be simple or complex and also may be generalized or partial. The prevalence of febrile seizures among different communities is between 2-4%, but was as high as 9% in Japan and 15% in Mariana Island [5]. If a child has had a febrile convulsion; he or she is prone to develop more. About four out of ten children who had febrile convulsion will get them again at some stage, although the risk factors differ greatly from child to child [6]. A Child is fourfold a lot of doubtless to own a feverish convulsion if either parent was affected in their childhood. Children who have their first febrile convulsion before the age of one year has a 50% chance of further seizures [7]. Febrile seizures in children are commonly associated with upper respiratory tract infections, which are mainly viral in origin [8].



***Source*:** Google

Fig 1

As a rapid viral diagnosis is not readily available, it is common practice to prescribe antibiotics empirically, despite the danger of masking bacterial meningitis. Fortunately, most febrile seizures are benign and rarely cause brain damage. This study aimed to provide clinical profile, laboratory characteristics, treatment and outcome of patients with febrile seizure in our setting and to emphasize early identification of underlying cause of fever, which will enable the physician for appropriate counseling and management while avoiding unnecessary therapeutic interventions.

2. Review of the literature

FSs usually occur between 5 months and 6 years of age. They are associated with fever, but without evidence of intracranial infection, a defined cause or previous non-febrile seizures (Consensus Development Conference on Febrile Seizures 1980). Most FSs are single generalized seizures of duration less than 15 minutes, but 10–30% are complicated, i.e. prolonged (duration more than 15 minutes), multiple (with a recurrence within 24 hours) or having focal features (Nelson & Ellenberg 1978, Verity *et al.* 1985a, Knudsen 1990). FSs have a good prognosis and are to be distinguished from epilepsy, which is characterized by recurrent unprovoked seizures (Consensus Development Conference on Febrile Seizures 1980). Since fever can provoke seizures in epileptic patients at any age, an initial seizure occurring during fever can also be the first manifestation of epilepsy, but one seizure with or without fever never justifies a diagnosis of epilepsy. The occurrence of FS in Western Europe and the United States is 2-5% (Nelson & Ellenberg 1978, Verity *et al.* 1985a, Forsgren *et al.* 1990b). Nelson and Ellenberg (1978) observed a statistically significant difference between black and white children in this respect in a national cohort study (4.25% vs. 3.5%). The occurrence of FSs in Japan has been 7% (Knudsen 1990). Most population-based studies have not found any significant effect of gender (Nelson & Ellenberg 1978, Verity *et al.* 1985a, Knudsen 1990). In nearly 90% of cases the age at the onset of FSs is less than three years, and half of the patients experience their first FS during the second year of life (Verity *et al.* 1985a). In a meta-analysis of 14 evaluations of the predictors of recurrences, Berg *et al.* (1990) reported the average recurrence rate for FSs to be 34.3%, the risk of several recurrences being 16%. Half of the recurrences are reported to occur within six months of the initial FS and three quarters within a year (Nelson & Ellenberg 1978). A first FS at an age of less than one year doubled the risk of recurrences relative to a first attack later on. Young age has also been found to be the most powerful risk factor for multiple recurrences (Berg *et al.* 1990).

3. Justification

Febrile seizures (FS) is a common paediatric problem, which causes severe psychological reaction in the parents. Besides, there are many wrong traditional and local methods of management as a result of lack of proper knowledge of FS by the parents. Only one study has been conducted on FS in Sudan investigating the clinical pattern of FS, but no study on parent's knowledge, attitude, practice and psychological impact of FS on the parents has been done before.

4. Objectives

a) To study the clinical types and relative risk factors in children presenting with febrile seizures (FS).
b) To study the knowledge, attitude and practice of parents toward their children with FS.
c) To investigate the effect of FS on the behavior and emotional situation of the parents.

5. Materials and Methods

In this cross sectional study, 80 children aged between 5-72 months who were admitted into High Dependency and Isolation Unit of Dhaka Shishu (children) Hospital at July 01, 2017 to June 30, 2018 with the diagnosis of FC were evaluated. Patients with a past history of afebrile convulsion, metabolic disorders, known illnesses of central nervous system and neurological deficits were excluded from this study. Data were collected by a trained physician

using a structured questionnaire regarding age, gender, type of convulsion (generalized or focal), duration of convulsion, type of the febrile convulsion (simple or complex), temperature (from the history or document on admission), family history of febrile convulsion, family history of epilepsy, past history of the febrile convulsion, underlying causes of fever, signs and symptoms of meningitis, clinical and laboratory data including treatment and outcome of the child. Investigations as well as blood count and humor electrolytes were performed on all kids. alternative investigations performed considering the history and clinical profile of the individual kid were- glucose, humor metallic element, blood culture, CRP (CRP) blood gas analysis, water for routine and microscopic examination and culture, CXR, prenatal diagnosis of brain, graphical record and CSF analysis. No test for viral isolation was done in any of our cases. A written informed parental consent was obtained for each patient in this study. Data was analyzed by SPSS version windows 10.

6. Results

A total of 80 patients were included in the study. Out of 80 cases 9 (11.25%) were below six months of age at onset, 41 (51.25%) between six and 12 months, 19 (23.75%) between 13 and 18 months and 11 (13.75%) were above 18 months (Figure-1). Forty eight patients were male and 32 were female (ratio 1.5:1) as shown in (Figure 2).

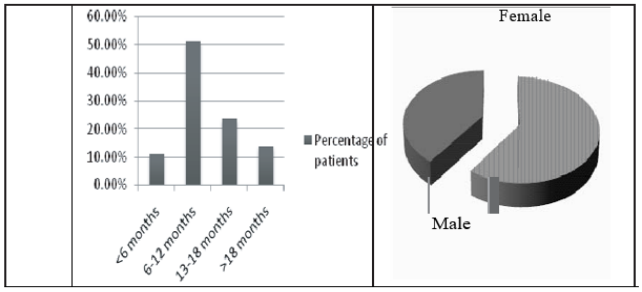


Fig 1: Age distribution of the study children Figure 2 – Sex distribution of the study children

Febrile convulsions were generalized in 72 (90%) cases and partial in eight (10%) cases. In 70 (87.5%) cases the duration of seizure was less than 15 minutes and in rest (12.5%) it was more than 15 minutes. Attack of convulsion within 24 hours of onset of fever was found in 60 cases (75%). Family history of febrile convulsion was reported in 16 (20%) cases. Fifty-four patients had the 1st attack of FC this time and recurrent febrile convulsions occurred in 26 (32.5%) cases, of which 20 had one previous attack and rest six had more than one attack. Type of FC was simple in 49 (61.2%) cases and complex in 31 (38.8%) cases (Table I).

Table 1: Characteristic of convulsions (N=80).

Type of convulsion	Number	Percentage
Generalized	72	90%
Partial	8	10%
Duration in minutes		
<15 minutes	70	87.5%
>15 minutes	10	12.5%
Number of attacks		
in 1st 24 hours		
One attack	60	75%
>one attack	20	25%
Family History		
Present	16	20%
Absent	64	80%
Recurrence		
1st attack	54	67.5%
One previous attack	20	25%
>One previous attacks	6	7.5%
Nature		
Simple	49	61.3%
Complex	31	38.7%
Post-ictal condition		
Asleep	40	50%
Awake	38	47.5%
Undetermined	2	2.5%
Post-ictal paralysis	0	0%

From history temperature at the time of convulsion was very high in 60 (75%) cases and high in rest of the cases. None was afebrile. Duration of fever prior to first convulsion ranged from 0-68 hours and the mean was 16.5 hours. After the first seizure none of the children had any postictal paralysis, 40 (50%) out of 80 were asleep and 38 (47.5 %) were awake. Two of the parents were uncertain of their child's condition postictally. Over 60% parents failed to identify fever at the right time and to introduce antipyretics effectively before the convulsion took place. The most common symptoms accompanied by the febrile seizure were cough 31(38.8%) and coryza 25(31.2%). The other symptoms were diarrhea 10 (12.5%), abdominal pain 5 (6.2%), sore throat 7(8.8%) and dysuria 2 (2.5%) (Table-2).

Table-2: Presenting symptoms other than convulsion and fever on admission (N=80).

Symptoms	Number	(%)
Cough	31	38.8
Coryza	25	31.2
lLoose motion	10	12.5
Sore throat	7	8.8
Abdominal pain	5	6.2
Dysuria	2	2.5

CBC showed abnormalities suggestive of an infection in 45%, however, only 2 had a positive blood culture. CRP was raised in 24 cases. Anemia and metabolic acidosis were found in 28 and 14 cases respectively (Table 3). None of the patients had gross electrolyte abnormality.

Table 3: Abnormal results on blood examination in Patients with FC (N=80).

Laboratory findings	Number	Percentage
Leukocytosis	39	48.8%
Leukopenia	3	3.7%
Thrombocytosis	4	5.0%
Thrombocytopenia	10	12.5%
Anemia	28	35%
Metabolic acidosis	14	17.5%
CRP (raised)	24	30%

CSF analysis was done in 30 patients no one had abnormal findings in cerebrospinal fluid analysis in favor of meningitis. Chest X-ray was done with suspected LRT cases, of which 11 showed findings suggestive of pneumonia. Ultrasonography of brain was performed on 15 patients (18.7%), however, these tests did not show any abnormality in any of the cases. EEG was done in only 10 selective cases with complex FC and all EEG reports were normal. Upper Respiratory Tract Infection (URTI) was the most common cause of febrile illness in our study, although the underlying cause was not determined (Table 4). A vast majority of cases were unclassified regarding finding of etiology of fever.

Table 4: Etiology of Fever in Patient with FC (N=80).

Etiology of Fever	Cases, N=80(%)
Upper Respiratory Tract Infection	25(31)
Pneumonia	11(13.7)
Gastroenteritis	10(12.5)
Septicaemia	6(7.5)
Otitis media	5(6)
Urinary tract infection	2(2.5)
Unclassified	21(26)
Total	80 (100)

Duration of hospital stay ranged from 3 days to 12 days, median stay was 5 days. Most of the patients 55 (69%) stayed 3-5 days, 20 (25%) 6-8 days and 5(6%) patients for 9-12 days. All patients were recovered and discharged with advice (Figure 3).

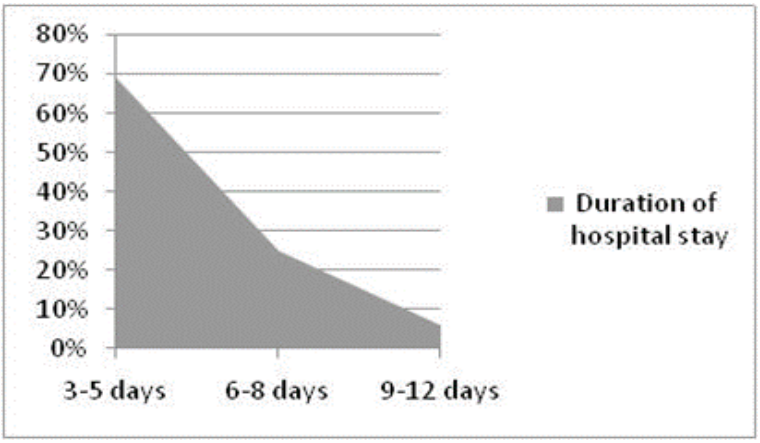


Fig 3: Duration of hospital stay

Regarding the management, 5(6.2%) received intravenous fluids (IVF) in the emergency room (ER) and total 73 (91.3%) during the hospitalization. Patients who were ill-looking received IV fluid in the ER and due to fear of further convulsion patients followed by chance of aspiration were kept nothing per oral and IV fluid was given mainly for providing nutrition. Only2 (2.5%) children received IV antibiotics in the ER, however, over 92.5% of the patients received them during hospitalization at least for the initial days. Similarly, over 92.5% patients received prophylactic medication (Table 5), mostly Tab. benzodiazepine at the initial days of hospitalization. 10 patients got per-rectal benzodiazepine and a pair of patients needed blood vessel phenobarbiton at hospital room and once dominant convulsion they were admitted for additional management.

Table 5: Management of study children (N=80).

Received intravenous fluid	Number	Percentage
Yes	73	91.3%
No	7	8.7%
Received intravenous antibiotics		
Yes	74	92.5%
No	6	7.5%
Received prophylactic anticonvulsant		
Yes	74	92.5%
No	6	7.5%

7. Discussion

In this study, the majority of children were under 2 years old and our findings were similar to other studies in which FC was in the age range of 6 months to 3 years with peak incidence at the age of 18 months [10/ 9]. Prevalence of FC was predominant in males than females and this is in agreement with the results of other studies [10]. Here16 patients (20%) had a positive family history of FC, while this percentage in the other studies varied widely from 25% to 40% [11], Ninety percent of children in the present study had generalized convulsion that is similar to findings of Hoque M *et al*. In our study, 49 children (61.2%) were suffering from simple FC, while this was between 60% to 90% in other study [10]. Distribution of simple and complex FC varied widely in different studies [12], which may be due to difference in criteria adopted. Duration of seizure of discrete than 15 minutes was noted in 87.5% patients in this study, which was close to Bessissco *et al.* findings [13]. Mean duration of fever prior to first convulsion in our study was 16.5 hours and it was associated with very high fever in majority of the cases, which is consistent with the findings of Deng CT *et al*. None of patients had any post-ictal paralysis and majority of patients were either asleep or awake. These data were similar to other study. The most common symptoms accompanying the febrile seizure were cough and Coriz in our children, which were well correlated to with the findings of Deng CT *et al*. [14] But found that loose motion was the most common symptom of febrile illness in his study. URTI was the most common cause of febrile illness in our study, although the underlying pathogen was not determined. A vast majority of cases were unclassified regarding finding of etiology of fever. This is mostly due to lack of facilities to identify the viral origin responsible for the high fever leading to FC to the predisposed group of children. Otitis media was diagnosed in 5 cases and otitis media remains the most common cause of FC in a study conducted in Carolina [16]. This study may be due to very strict inclusion criteria of our study population. However, investigations like neuro imaging are discouraged in simple febrile seizure. Duration of hospital stay depends on the underlying etiology identified and higher number abnormal CBC count (45%), it was similar to Deng CT *et al*. [14] study. More than 90% received intravenous antibiotics during hospitalization, which should be discouraged, although probably it was given to treat bacterial meningitis or septicaemia due to failure of identifying the responsible virus in our facilities. The same thing is happening in case of use of anti-epileptic drugs (AEDs) like diazepam or phenobarbitone due to prevent further convulsion, although only 25% cases had a second attack of convulsion in this study. Studies revealed that treatment with antiepileptic drugs does not abort the cluster in most children [17]. A retrospective study reported that diazepam was effective against prevention of second convulsion in only 2 of 16 patients (13%) [18]. AEDs should be used judiciously in the Emergency room and during hospitalization, which is consistent with the latest American Academy of Pediatrics recommendations that AEDs should not be used routinely to prevent febrile seizure recurrence [19].

8. Limitation of the Study

The limitation of the study was that a number of samples could not be analyzed due to the inadequate quality of the specimen. Overall this study resulted in giving an updated result of prevalence of febrile Seizure and the clinical finding in the Dhaka Shishu (Children) Hospital; it will help to estimate the disease burden of febrile diseases caused by Observation between two Units Clinical findings of Febrile Seizures. This will also help in characterization of the Seizure pathogens and thus lead to planning for vaccine intervention. The designing and proper choice of vaccine for the people particularly for Dhaka Shishu (Children) Hospital and other Febrile Seizures endemic to minimize the prevalence of disease.

9. Conclusion

In this study, higher tract infection was found as common explanation for symptom convulsion. Period of seizure was but quarter-hour and blood disease, raised CRP was known and every one patients received broad-spectrum antibiotics throughout hospital keep. There was a small male preponderance, male to feminine magnitude relation of 1.5:1 and a lower mean age of onset and prevalence for FS among Sudanese children. The magnitude relation between children presenting easy advanced and sophisticated complicated seizures were as international studies however not like international studies 2 thirds of complex seizures were recurrences. Family history of FS in a very second degree relative and parental perception of slow development was found to be the foremost necessary predictors for a primary FS in Sudanese children. Low age at onset for FS has appeared a crucial predictor for a repeated FS. Although fever associated seizures were noted to most of oldsters, poor data concerning the character of FS was current. Health education is lacking between our communities as easy risks of associate degree acute attack of seizure and aid to be applied throughout the seizure weren't noted. Health institutes and employees play an awfully weak role in providing health education to the community and most of the data were obtained from neighbors and relatives. Negative attitudes and high issues concerning FS were current and though concerning one quarter of the fogeys mentioned ancient treatment. FS was related to an excellent deal of tension within the oldsters that was found to be relieved by data concerning FS however not by the other issue like: repeat, case history of FS or academic level of the parent. We tend to found no association between earned data concerning FS and repeat, academic level of the parent or case history of FS.

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Conflict of interest: The Author has no conflict of interest of the study.

10. References

1. Martindale JL, Goldstein JN, Pallin DJ. Emergency department seizure epidemiology. Emerg Med Clin North Am. 2011; 29(1):15-27.
2. Ducan JS, Shorvon SD, Fish DR (editors). Clinical Epilepsy, First edition. New Delhi: B.I. Churchil Livingstone Pvt. Ltd, 1995, Pp. 74-76.
3. Khan MR. Febrile seizure. Bangladesh Private Medical Practitioners Journal. 2003; 9:30-31.

4. Shinnar S, Glauser TA. Febrile Seizures. J Child Neurol. 2002; 17:S44.
5. Tsuboi T. Epidemiology of febrile convulsions in children in Japan. Neurology. 1984; 34:175-181.
6. Wallace SJ. Recurrence of febrile convulsions. Arch Dis Child. 1974; 49:763-775.
7. Collins T. Febrile convulsion. Institute of Child Health. Great Ormond Street Hospital for Children. Published in The Times of London, 14 March, 2000, pp. 89-94.
8. Millichap JG, Millichap JJ. Role of viral infec- tions in the etiology of febrile seizures. Pediatr Neurol. 2006; 35:165-72.
9. Fetveit A. Assessment of febrile seizures in children. Eur J Pediatr. 2008; 167(1):17-27.
10. Hoque M, Ali CMH, Zaman MS, Ahmed ASMNU, Hossain MM, Begum JA, Jahan A. Risk Factors For Recurrent Febrile convulsion. Journal of Bangladesh College of Physicians and Surgeons. 2004; 22(2):49-52.
11. Verity CM, Butler NR, Golding J. Febrile convulsions in a national cohort followed up from birth- Prevalence and recurrence in the first five years of life. Br Med J (Clin Res). 1985; 290(6478):1307-10.
12. Fallah R, Golestan M. Role of laboratory diagnostic tests in first febrile seizure. J Pediatr Neurol. 2008; 6(2):129-132.
13. Bessissco MS, Elsaid MF, Almula NA *et al*. Recurrence risk after a first febrile convulsion. Saudi Medical Journal. 2001; 22(3):254-258.
14. Deng CT, Zulkifli HI, Azizi BHO. Febrile seizure in Malaysian Children: Epidemiology and Clinical Features. Med J Malayasia. 1994; 49:341-347.
15. Aliabad GM, Khajeh A, Fayyazi A, Safdari L. Clinical, Epidemiological and Laboratory Characteristics of Patients with Febrile Convulsion. J Compr Ped. 2013; 4(3):134-7.
16. Millichap JJ. Febrile seizure management in hospital practice compared to guidelines- In: Program and abstracts of the American Academy of Neurology 60th Annual Meeting (Chicago). Saint Paul, MN: American Academy of Neurology. 2008; A131. p. 12-15.
17. Uemura N, Okumura A, Negoro T, *et al*. Clinical features of benign convulsions with mild gastroenteritis. Brain Dev. 2002; 24:745-749.
18. Enoki H, Yokota T, Nagasaki R. Single-dose chloral hydrate for benign convulsions with mild gastroenteritis. Epilepsia. 2007; 48:1026-1028.
19. Bidabadi E, Mashouf M. Association between iron deficiency anemia and first febrile convulsion: A case-control study. Seizure. 2009; 18(5):347-51.
20. Annegers JF, Hauser WA, Elveback LR, Kurland LT. the risk of epilepsy following febrile convulsions. Neurology. 1979; 29:297-303.
21. Antony JH, Hawke SHB. Phenobarbital compared with carbamazepine in prevention of re-current febrile convulsions. Am J Dis Child. 1983; 137:892-895.
22. Autret E, Billard C, Bertrand P, Motte J, Pouplard F, Jonville AP. Double-blind, randomized trial of diazepam versus placebo for prevention of recurrence of febrile seizures. J Pediatr. 1990; 117:490-494.
23. Bacon CJ, Hierons AM, Mucklow JC, Webb J, Rawlins MD, Weightman D. Placebo con-trolled study of phenobarbitone and phenytoin in the prophylaxis of febrile convulsions. Lancet. 1981; 2:600-604.
24. Baik EJ, Kim EJ, Lee SH, Moon C. Cyclo-oxygenase-2 selective inhibitors aggravate kainic acid induced seizure and neuronal cell death in hippocampus. Brain Res. 1999; 843:118-129.
25. Barone SR, Kaplan MH, Krilov LR. Human herpesvirus-6 infection in children with first fe-brile seizures. J Pediatr. 1995; 127:95-97.
26. Barr WB, Ashtari M, Schaul N. Bilateral reductions in hippocampal volume in adults with epilepsy and a history of febrile seizures. J Neurol Neurosurg Psychiatry. 1997; 63:461-467.
27. Bauman RJ, Duffner PK. Treatment of children with simple febrile seizures: the AAP prac-tice parameter. Pediatr Neurol. 2000; 23:11-17.
28. Baumer JH, David TJ, Valentine SJ, Roberts JE, Hughes BR. Many parents think their child is dying when having a first febrile convulsion. Dev Med Child Neurol. 1981; 23:462-464.
29. Berg AT, Shinnar S, Hauser WA, Leventhal J. Predictors of recurrent febrile seizures: Ameta-analytic review. J Pediatr. 1990; 116:329-337.
30. Berg AT, Shinnar S, Hauser WA. A prospective study of recurrent febrile seizures. N Engl J Med. 1992; 327:1122-1127.