

Causes of Infectious Diseases Which Tend to Get Into Febrile Convulsion

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Abstract

Background: Febrile convulsions are seizures associated with fever during childhood. They generally have excellent prognosis. However, as they may signify a serious underlying acute infectious disease, each case must be carefully examined and appropriately investigated.

Objectives: The aim of this study was to investigate the causes of infectious diseases, which tend to get into febrile convulsion in patients hospitalized in 17th Shahrivar Hospital in Rasht city, Iran.

Patients and Methods: This descriptive cross-sectional study was conducted on all children hospitalized with infectious diseases in 17th Shahrivar Children's Hospital in Rasht city, Iran, between August 2008 and August 2009. They were recruited using the convenient method. Data were collected using a form including age, sex, season of admission and possible diagnosis and analyzed by descriptive statistics (mean, standard deviation and frequency) using SPSS software version 16.

Results: In this study, 191 patients (14%) had febrile convulsion. According to the results, respiratory tract infection was mentioned in 97 cases (47.3%) and considered as the leading cause of fever.

Conclusions: According to results, it seems that clinicians should assess patients with infectious disease thoroughly to prevent further health problems.

Keywords: Seizures, Febrile, Infection, Children

1. Background

Febrile convulsions are seizures that associate with fever during childhood (1). They are the most common forms of childhood seizures. They most commonly occur in children between the ages of 6 months and 5 years (2) with the peak incidence of 18 months (3). In the United States and Western Europe, they occur in 2% to 4% of all children (2, 4). Febrile convulsion occurs more commonly in boys than in girls (5).

Although, febrile convulsions generally have an excellent prognosis, they may signify serious underlying acute infectious diseases such as sepsis or bacterial meningitis. Therefore, each child must be carefully examined and appropriately investigated to see whether there are associated causes for the fever or not. Infectious diseases are important causes of mortality and morbidity in children and have been indicated as particular concerns in pediatric wards (6, 7).

Febrile seizures should be distinguished from epilepsy, which is characterized by recurrent non-febrile seizure. A febrile seizure is an event associated with fever but without evidence of intracranial infection or defined cause (5). Some drugs commonly used to treat febrile seizures (both antipyretics and anticonvulsants) are not very effective in preventing the disease (6).

2. Objectives

The aim of this study was to investigate the causes of infectious diseases, which tend to get into febrile convulsion in patients hospitalized in 17th Shahrivar Children's Hospital in Rasht city, Iran.

3. Patients and Methods

This descriptive cross-sectional study was conducted on all children with infectious diseases hospitalized in 17th Shahrivar Children's hospital from August 2008 to August 2009. Fever was noted by temperature of 37.5°C or higher that are not as a result of central nervous system infections or any metabolic imbalance. It occurred in the absence of prior a-febrile seizures.

A written consent form was obtained from the patients' parents and data were collected using a form which consisted of age, sex, season of admission and possible diagnosis. Patients were assessed daily and a trained expert noted possible diagnosis of febrile convulsion by clinical examination, laboratory results and radiological findings. Auxiliary temperature was assessed using a digital thermometer and fever was indicated by > 37.5°C temperature.

Respiratory tract infection was indicated by clinical examinations and laboratory results. Bacterial pneumonia was indicated by fever, distress, sickness and leukocytosis (neutrophil dominant). Also, pulmonary radiography mention low bar radiologic finding Influenza was indicated by fever, headache, rhinorrhea and myalgia.

Acute bacterial sinusitis and sinobronchitis were noted using the physical examination and radiographic findings (opacity in sinuses).

Pharangotonsillitis was indicated by physical examination and positive urine culture. Gastroenteritis was indicated by diarrhea, dehydration and physical examination. Moreover, otitis media was indicated by physical examination. Clinicians diagnosed urinary tract infection by fever, piuria and positive urine culture.

Data were gathered and reported by descriptive statis-

tics such as mean, standard deviation, frequency, maximum and minimum using SPSS version16.

4. Results

In this study, 1357 patients with infectious diseases were hospitalized in the hospital. The frequency of febrile convulsion was 14% (191 patients). The mean age of these patients was 27.35 ± 15.20 months and 119 patients (58 %) were male (male to female ratio was 1.4:1).

Respiratory tract infection was mentioned in 97 cases (50.7%) and considered as the leading cause of fever (Table 1). Also, the highest frequent etiology of respiratory infection was bacterial pneumonia, which occurred in 61.8% of the cases with respiratory tract infection.

Frequency rates of febrile convulsion according to season were as below: winter 84 cases (41%), fall 44(21.4%), summer 41(17.6%) and spring 36 (17.6%).

Table 1. Etiology of Fever in Patients With Febrile Convulsion

Etiology of Fever	No (%)
Respiratory tract infections	97 (50.78)
Viral pneumonia	14 (14.4)
Bacterial pneumonia	60 (61.8)
Influenza	13 (13.4)
Acute bacterial sinusitis	4 (4.1)
Pharangotonsillitis	2 (2)
Sinobronchitis	4 (4.1)
Gastroenteritis	42 (21.98)
Otitis media	26 (13.6)
Urinary tract infection	13 (6.8)
Unclassified	13 (6.8)
Total	191 (100)

5. Discussion

Our results showed that the mean age of children with febrile convulsion was 27.35 ± 15.20 months, it was similar to the results mentioned by Esmaili Gourabi et al. (7) and Aliabad et al. (8) which noted the mean age of 25.24 ± 15.40 and 26.2 ± 19.5 months, respectively.

Results of the present study showed that febrile convulsion occurred more in males than in females, and it was similar to the result mentioned by Khan et al. (4) and Aliabad et al. (8) which noted that febrile convulsions are twice as common in boys than in girls.

According to the previous studies, the frequency of febrile convulsion in children was 2% - 5% (4). Also, in Japan, 9% to 10% of all children experienced febrile convulsion (9), which was inconsistent with our results. Also, other results showed that 18.8% of children hospitalized for influenza A had febrile seizures (10). Moreover, our results showed that 14% of patients encountered with febrile convulsion. It seems that this difference might be because

of different types of sampling. In this study, researchers chose hospitalized children but Aliabad et al. (8) and Tsuboi et al. (11) mentioned the prevalence of febrile convulsion in general population.

Respiratory tract infections were the leading cause of fever among patients; it was similar with the results mentioned by Esmaili Gourabi et al. They also noted upper respiratory tract infections in most patients (74.29%) (7). Also, Al-Zwaini et al noted that upper and lower respiratory tract infections were the cause of fever in 67% of the patients and most of them were admitted to the hospital in winter (12). Therefore, it seems that planning for controlling respiratory tract infections like vaccination can be recommended.

In addition, current results showed a higher frequency of bacterial pneumonia toward viral pneumonia, which was consistent with Virkki et al. (13) However, previous studies mentioned inconsistent results (14, 15). It seems

that this difference may be because of difference in population. As, we assessed the hospitalized patients, bacterial pneumonia was higher which may be as a result of super infection or bacterial pneumonia.

However, in an inconsistent study, diarrhea was the leading cause of febrile convulsion (2) this difference may be because of different geographical zones and the effect of warm climate on diarrhea.

Furthermore, our results showed that most of the febrile convulsions occurred in winter. However, Tsuboi et al. (11) revealed two peak appearances of seasonal variation of the first febrile convulsion, which were in November-January and in June-August. The former might be interpreted as a higher virus infection and the later could be explained as a tendency to gastrointestinal infection (11). Also, Manfredini et al. showed that a seasonal peak was observed in January (16). According to results, it seems that clinicians should assess patients with infectious disease thoroughly to prevent further health problems. Researchers recommend further epidemiologic investigations on this issue.

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Footnote

Authors' Contribution: Kobra Blouki Moghaddam, Elham Bidabadi, and Setila Dalili conceptualized and designed the study, and drafted the initial manuscript and reviewed and revised the manuscript. Afagh Hasanzadeh Rad drafted the initial manuscript and revised the manuscript and critically reviewed the manuscript. All authors approved the final manuscript as submitted and agreed to be accountable for all aspects of the work.

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