

Management of Febrile Seizures in Children

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Abstract:

Aim: To observe the management and treatment of febrile seizures in children that is to prevent the condition from becoming worse and to prevent it from causing other complications. **Methods:** In our observational study, a total of 25 patient's febrile seizures were studied. A Performa was designed to collect data related to the patient's treatment. **Result:** Percentage of male patients was greater as compared to females because of genetic factors. Mode of admission in febrile fits was always emergency and not outdoor. Fits was greater in patient's age ranging from 6 months-2years. The most common cause of fever leading to febrile convulsions was respiratory tract infections 40%, 2nd most common being UTI that accounts for 24%, CNS infections being 8% and other causes 24%. Family history was positive in 12% cases only, 88% patients don't have significant family history for febrile fits. Most of the febrile fits were controlled in the emergency department with medications and sponging. Immediate medications that are used include Syp. PCM that is prescribed in 64% cases while inj. diazepam in 52% cases and Syp. Brufen in 12% cases depending upon patient symptoms. %. Course of antibiotics are completed even after discharge to prevent susceptibility of infection. There was a precise role of pharmacist within the required premises for the regular availability of drugs, but there was a lack of active patient counseling procedure **Conclusion:** There is a need for pharmacist intervention in the management of febrile seizures and to educate the parents about the importance of initial management and lifestyle changes during fits. By providing this service to the patients many drugs related problems further complications and deaths can be avoided.

Key words: *Febrile seizures, Management*

Introduction:

The term febrile convulsion is not a diagnostic entity. It simply describes any seizure that occurs in response to a febrile stimulus. It usually occurs between the age of 3 months and 5 years and occurs in 2-4% of young children. The typical febrile convulsion is a generalized tonic clonic seizure lasting between a few seconds and 15 minutes, followed by a period of drowsiness. Febrile seizures tend to occur in families, although the exact mode of inheritance is not known. Viruses are the most common cause of illness in children admitted to the hospital with a first febrile seizure. Routine laboratory studies are not indicated for patients who have febrile seizures and should be performed only as part of the evaluation for a source of fever. Prognosis is generally good. Only a small minority of children develop epilepsy or recurrent non-febrile seizures. Children with febrile seizures are at no greater risk of intellectual impairments than their peers. Treatment to prevent recurrence has not been shown to prevent later development of epilepsy.^[1]

Assessment of treatment strategies in febrile seizures should be based on short- and long-term outcomes, with and without acute, intermittent, or chronic medical intervention, as well as short- and long-term side effects. Febrile seizures are a benign condition with a normal neurological, motor, intellectual, and cognitive long-term outcome and have a low risk of later epilepsy in most cases. Even many complex febrile seizures have a benign outcome. Prophylaxis may or may not reduce the recurrence rate, but does not appear to improve the long-term outcome as compared to acute treatment of seizures in progress. All agree that chronic

prophylaxis with anti-epileptic agents is justified only in highly selected cases, if at all. Treatment with benzodiazepines during febrile episodes appears to effectively reduce the recurrence rate, provided adequate doses are given and compliance problems minimized. A selective approach to intermittent diazepam prophylaxis seems rational, as the recurrence risk and response to treatment are highly variable. An attractive alternative is acute treatment at seizure onset with rectal diazepam in solution given by the parents at home in order to prevent prolonged recurrent seizures. This regimen has the potential of moving the first line of anti-convulsant defense close to the child. It appears to be effective, inexpensive, and feasible even for non-professionals, has few side effects and is well accepted by the parents. A reasonable policy would be to treat simple febrile seizures solely with acute rectal diazepam in solution and reserve intermittent diazepam prophylaxis for selected cases including those with multiple or prolonged recurrences, several risk factors for recurrent febrile seizures and other special situations.^[2]

Febrile seizures are the most common seizure disorder seen in children and most often occur between the ages of 6 months and 5 years. Febrile seizures are usually self-limited and need no further neurodiagnostic evaluation. Rarely does medication need to be prescribed. For children with prolonged or multiple febrile seizures, diazepam rectal gel (Dias tat) is a safe and effective treatment. There are no significant long-term risks associated with febrile seizures.^[3]

Febrile seizures are the most frequent neurologic disorders during childhood. The pathogenesis is not clear even today. Viral infections of the upper

airways, exanthema subitum, acute otitis media, infection of the urinary tract and febrile reactions after vaccination are the most frequent precipitating factors. Predictors in identifying children with very high risk of recurrence are young age at onset, family history of febrile seizures in a first-degree relative, a history of recurrent febrile seizures and a lower degree of fever at the onset of febrile seizures. A family history of epilepsy, neurodevelopment abnormalities and a lower degree of fever at the onset of febrile convulsion are predictors of later epilepsy in children who have febrile seizures. The prognosis of febrile seizures is very good. In the acute situation, rectal diazepam should be given in the event of prolonged febrile seizures (> 3 minutes) only. Intermittent diazepam therapy and long-term antiepileptic are not recommended. The best prophylactic treatment is education and reassurance for parents and children.^[4]

Febrile seizures are common in children, who are often brought to the nearest emergency department (ED). Patients who meet the case definition of simple febrile seizure are not at higher risk for serious bacterial illness than clinically similar febrile children who have not experienced a convulsion. Children who have had complex febrile seizures must be evaluated on a case-by-case basis, and treated with diagnostic and therapeutic measures based on the differential diagnosis. Round-the-clock prophylactic administration of antipyretics has not been demonstrated to affect recurrence of simple febrile seizure. Parents should be informed that recurrence is common, and that these convulsions are benign with an excellent prognosis. Care-givers should be informed that the risk of developing epilepsy after a simple febrile seizure is low, but that complex febrile seizures carry a significantly higher risk.^[5]

According to comprehensive cohort studies the long term prognosis for children with febrile seizures is far better than previously assumed. There is very little risk of neurological deficit, epilepsy, mental retardation, or altered behavior as sequelae to febrile seizures. As a natural consequence of the good long term prognosis, the routine use of continuous phenobarbitone or valproic acid prophylaxis is not indicated in simple febrile seizures and only rarely in complex febrile seizures. A rational alternative is intermittent prophylaxis by rectally administered diazepam in solution in the event of fever or acute treatment during continuing convulsions. This prophylaxis may be used selectively for children at high risk of new febrile seizures, or routinely for all children after the first attack of febrile seizure. The treatment is almost devoid of major side effects. If prophylaxis is to be avoided altogether, parents should be supplied with a diazepam solution for rectal use to deal with new seizures.^[6]

The main objective was to study Predisposing factors associated with febrile seizures are Complications of febrile seizures & Management of febrile seizures

Materials and Methods:

The study was conducted to see the management of febrile seizures in children. Case history of 25 patients admitted in Mayo Hospital Lahore from 14th June to 14th July, 2010. were collected and different parameters were observed and entered into a Performa WHICH was designed to collect data related to the patient’s symptoms, diagnosis, treatment plan, drugs given and lifestyle modifications

Inclusion Criteria:

Patients with definitive diagnosis of febrile fits, Hospitalized pts. Undergoing medication for treatment and Children of ages between 6 months to 6 years

Exclusion criteria:

Patients With definitive diagnosis of fits other than febrile fits and Patients below 6months and above 6 years of age.

Results:

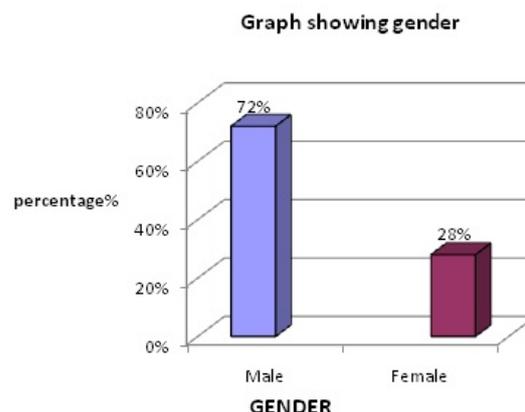


Figure 1 showing occurrence of febrile fits in male vs. female, predominantly in males 72% as compared to females 28%.

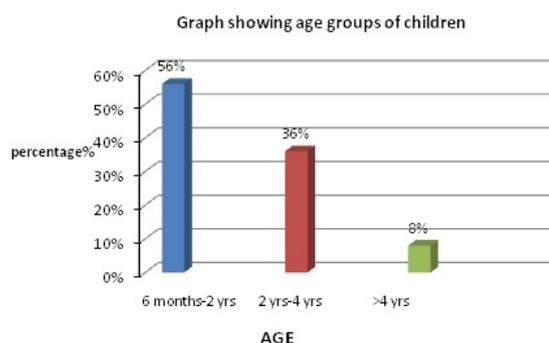


Figure 2 showing occurrence of fits in diff. age groups of children, in decreasing order, 6months-2 yrs 56%, 2yrs-4yrs 36% and >4yrs 12%.

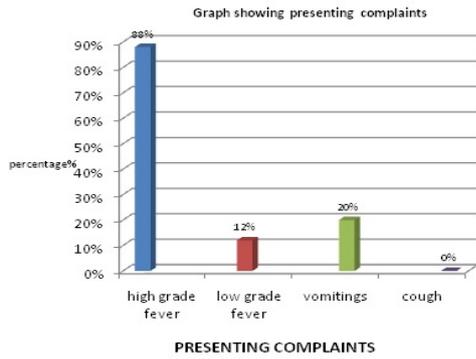


Figure 3 showing various presenting complaints in patients, in decreasing order, high grade fever 88%, vomiting 20% and low grade fever 12%.

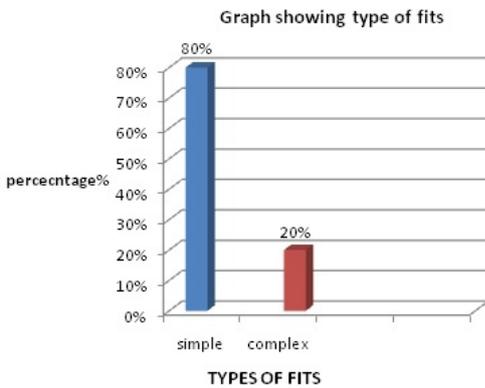


Figure 4 showing occurrence of simple vs. complex febrile fits, simple 80% and complex 20%.

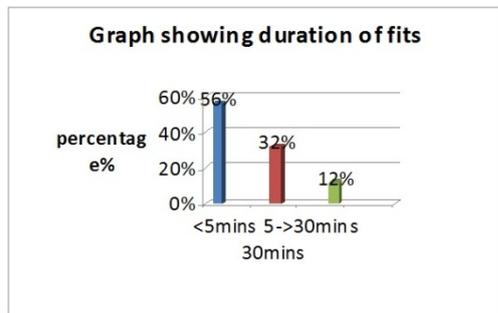


Figure 5 showing duration of febrile fits, 56% less than 5 mins, 32% 5-30 mins and 12% greater than 30 mins.

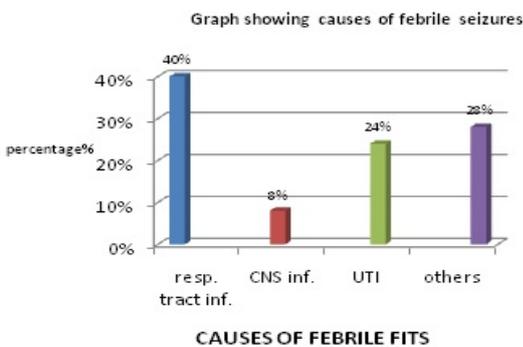


Figure 6 showing various causes of febrile fits, in decreasing order, resp. tract infections 40%, and non-identifiable causes 28%, UTI 24% and CNS infection 12%.

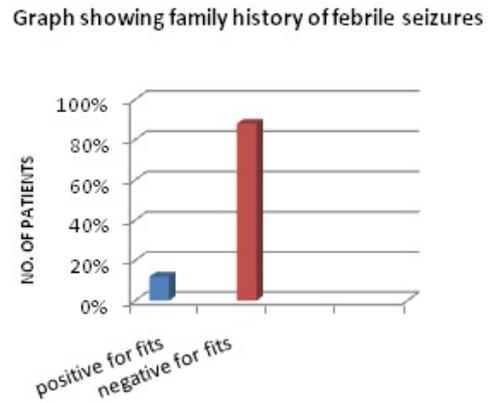


Figure 7 showing occurrence of SOMI in patients with febrile fits, positive in 24% of patients and negative in 76% patients.

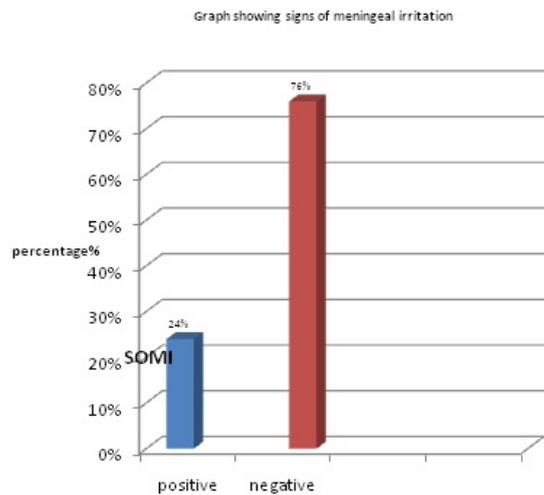


Figure 8 showing relation of febrile fits with family history of fits, only 12% cases show positive history, while 88% has no previous history of fits.

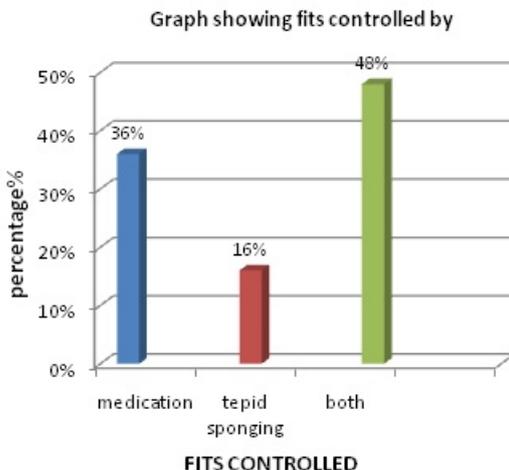


Figure 9 showing how to control febrile fits, 48% both sponging and medication, 36% medication alone and 16% only tepid sponging.

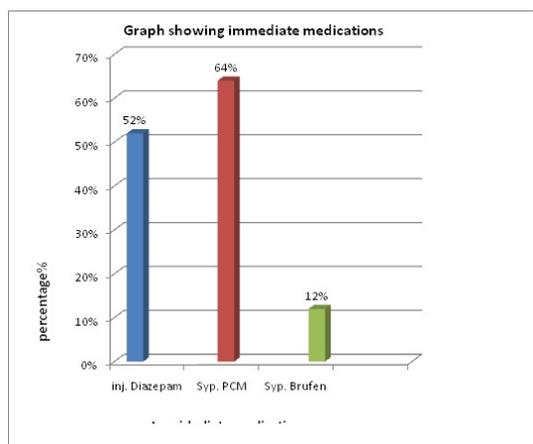


Figure 10 showing various immediate medications in febrile fits, 64% Syp PCM, 52% inj. Diazepam, and 12% Syp Brufen.

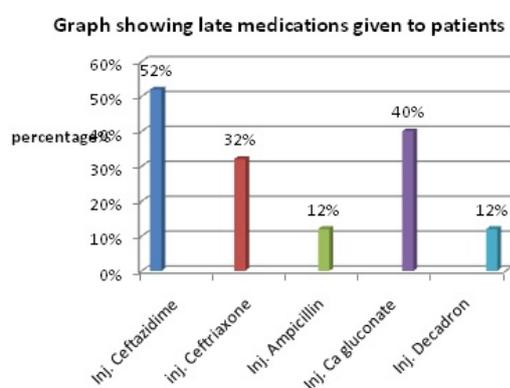


Figure 11 showing various late medications used in febrile fits, 52% cefuroxime, 32% ceftriaxone, 12% ampicillin, 40% Ca gluconate and 12% decadron.

Discussion:

During our study at MAYO HOSPITAL following results was calculated Data of 25 patients with febrile fits recorded 72% were male and 28% female. Percentage of male patients is greater as compared to females because of genetic factors. In 25 patients febrile fits is greater in patients age ranging from 6 months-2years Disorders of cerebral development (e.g. neuronal proliferation, migration, organization, mediation) may make a child vulnerable to fever provoked seizures at younger age because of many of these developmental processes (e.g. organisation, and myelination) in central nervous system continue after birth through infancy and childhood. In presenting complaints high grade fever is present in 88% cases, low grade fever in 12% cases, while vomiting consists of only 20% of the cases. In 25 patients of febrile fits, 80% patients had simple febrile fits and 20% patients had complex febrile fits. Duration of fits varied with each patient. 56% being less than 5 minutes, 32% of 5-15 minutes and 12% patients suffered fits of more than 30 minutes. The most common cause of fever leading to febrile convulsions was respiratory tract infections 40%,

2nd most common being UTI that accounts for 24%, CNS infections being 8% and other causes 24%. Family history was positive in 12% cases only, 88% patients don't have significant family history for febrile fits. Most of the febrile fits are controlled in the emergency department with medications and sponging, because of development of serious after effects prolonged complex febrile fits such as aspiration, trauma, recurrent fits and progression to epilepsy i.e. 48%, medications alone controlled 36% of the cases, and sponging alone controlled 16% cases. Immediate medications that are used include Syp. PCM that is prescribed in 64% cases while inj. diazepam in 52% cases and Syp. Brufen in 12% cases depending upon patient symptoms. Syp. PCM is a major prescribed drug due to free availability of this medication within the department. Immediate medications that are used include Inj. Diazepam, Syp. PCM and Syp. Brufen etc. Later medications are used in almost every patient to treat infection. Inj. Ceftriaxime being 52 %, inj. Cefotaxime being 32% and inj. Ampicillin being 12%. Course of antibiotics are completed even after discharge to prevent susceptibility of infection.

There is a precise role of pharmacist within the required premises for the regular availability of drugs, but there is a lack of active patient counseling procedure. By providing this service to the patients many drugs related problems and deaths can be avoided.

Conclusion:

Febrile seizures may cause great fear and concern for parents, most febrile seizures produce no lasting effects. Febrile convulsion a frightening event, still it is a benign condition. The goal of treatment is to prevent the condition from becoming worse and to prevent it from causing other complications like choking and to educate parents that how to manage their child at home. During time of seizures parents must follow lifestyle modifications that are placing child on his/her side, giving comfort to child, don't put anything in child mouth and parents must try to time the seizure using watch or a clock. Because they're so alarming, seizures often seem to last longer than they really do. Also try to note which part of your child's body begins to shake first, and look for other signs of illness. This can help your doctor understand the cause of the seizure. In general, most patients with febrile fits are initially treated by lowering temperature and controlling fits because of development of serious after effects prolonged complex febrile fits such as aspiration, trauma, recurrent fits and progression to epilepsy. There is a need for pharmacist intervention in the management of children with febrile seizures and to educate the parents about the importance of initial management done at home.

Recommendations:

Febrile seizures are the most common seizure disorder seen in children and most often occur between the ages of 6 months and 5 years. Febrile seizures are usually self-limited and need no further neurodiagnostic evaluation. Rarely does medication need to be prescribed. For children with prolonged or multiple febrile seizures, diazepam rectal gel (Dias tat) is a safe and effective treatment. There are no significant long-term risks associated with febrile seizures.^[7]

Febrile seizures are a common problem in young children. Most febrile seizures are benign in nature, although a small percentage of children may develop recurring febrile seizures or febrile seizures. The approach to the management of this disorder varies widely from specialty to specialty despite the recent publication of studies that provide for rational treatment of febrile seizures. Most children do not need any treatment after a first simple febrile seizure. In certain children who are at risk for recurrent febrile seizures, rectal anticonvulsants should be considered for acute, short-term management. Long-term anticonvulsants should be reserved for patients who are unable to use rectal anticonvulsants or who have significant risk factors for the development of febrile seizures.^[8]

Reasons for treating fever include patient discomfort, the potential for adverse sequelae, the possibility of seizures, and the possibility that fever could affect the pharmacokinetic profiles of drugs. Nonpharmacologic treatment for fever includes environmental measures to enhance dissipation of body heat and sponging. Aspirin and acetaminophen are the agents used most frequently for antipyresis in pediatric patients. However, aspirin use in children with a viral illness has been associated with development of Reye's syndrome. As a result, its use in children has declined in the United States. Acetaminophen is relatively free of adverse effects and is considered first-line pharmacologic antipyresis therapy. Ibuprofen suspension should be considered as second-line antipyretic therapy. Combination therapy with acetaminophen and aspirin may be considered if the patient fails to respond to other nonpharmacologic and pharmacologic therapies; however, combination therapy may result in increased risk of drug toxicity, increased probability of adverse reactions, and increased risk of intoxication. Aspirin, acetaminophen, and ibuprofen are equally effective for antipyresis in pediatric patients. However, because acetaminophen is the safest medication, it is currently the therapy of choice.^[9]

Simple febrile convulsions (brief and generalized) in children carry a high risk of recurrence during new febrile episodes (30-50%), especially while the

child is under the age of 3 years. These relapses are rarely severe and only occur during a minority of febrile episodes. Later onset of epilepsy is rare. (2) Long term treatment with Phenobarbital and valproic acid reduce the risk of relapse but carry a risk of bothersome or severe adverse effects. These treatments are rarely warranted in this setting. (3) Oral diazepam administration to a febrile child has moderate preventive efficacy, which is further limited by the difficulty of timing the treatment correctly. Oral diazepam has frequent but generally mild adverse effects. (4) Antipyretics are not very effective at preventing febrile convulsions but can make the child more comfortable. (5) Parents are often upset when they first see their child have a febrile convulsion. It is important to take the time to reassure those.^[10]

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