Background

Febrile seizures are seizures that occur in febrile children between the ages of 6 and 60 months who do not have an intracranial infection, metabolic disturbance, or history of afebrile seizures. Febrile seizures are subdivided into 2 categories: simple and complex. Simple febrile seizures last for less than 15 minutes, are generalized (without a focal component), and occur once in a 24-hour period, whereas complex febrile seizures are prolonged (15 minutes), or are focal, or occur more than once in 24 hours.

Febrile convulsions are common, and occur in 3 to 5% of healthy children between the ages of 6 months and 5 years, with peak incidence around 18 months. They are usually associated with a viral infection, although the exact aetiology of febrile convulsions is uncertain. The onset of the convulsion may be sudden with few symptoms of preceding illness, and the child may be drowsy and unwell looking for some time after the convulsion. The convulsion may be terrifying for caregivers to observe, they frequently believe that their child is dying and may attempt CPR or other resuscitative measures. However it is important to remember that simple febrile convulsions are benign, with minimal morbidity and essentially no mortality.

Acute Management

Sepsis

A child presenting after a febrile convulsion has the same risk for serious sepsis as another child of the same age presenting with fever alone. Children in this age group are at greater risk of bacterial infections such as septicemia and meningitis. A child who has had a febrile convulsion should be investigated according to the same criteria used for other children presenting with a febrile illness. Please refer to the guideline for the febrile child:

Prolonged Convulsions

Most febrile convulsions are brief (1-2 minutes) and do not require any specific treatment. Any child with prolonged seizure activity should be positioned to prevent aspiration of any vomitus (semi-prone) and should receive O2 via face mask. The airway should be monitored carefully and managed as necessary. Blood glucose should be checked urgently.

If a convulsion is continuing for longer than 5 minutes then the child should be managed as per Convulsions – status epilepticus guideline with:

Diazepam          IV / PO        0.25 mg/kg        max dose 10mg
Or
Midazolam        Buccal        0.5 mg/kg        max dose 10mg
CONVULSIONS - FEBRILE

If the seizure continues further management should be as per Convulsions – status epilepticus guideline.

**Complex febrile convulsions**

Repeated convulsions during the same illness occur in about 10-15% of children with febrile convulsions. If a child has a further convulsion they should be reassessed by their local doctor or in hospital. There are usually no serious implications of a repeated convulsion, however a period of observation may be required to clarify progress of the illness. Complex febrile convulsions in a previously neurologically normal child have a very low risk of intracranial pathology. Neuro-imaging should only be considered if preceding neurological abnormality or persisting abnormal neurology following a period of observation.

**Short Stay Unit Management**

Children who remain drowsy (GCS 13 or less) after a febrile convulsion should be observed in the short stay unit in Children’s ED. During the period of observation they should be on 30 minute neurological observations on the standard observation chart.

Post-ictal drowsiness is usually brief (1-2 hours). Children who regain a normal conscious level and appear well may be able to be discharged with appropriate advice to parents and no specific investigations.

The purpose of SSU observation is to avoid over-investigation or admission of those children with simple post-ictal drowsiness. If a child clearly needs admission because of the nature of the underlying febrile illness, their requirement for anticonvulsant therapy, or other factors they should be admitted directly to the ward after initial stabilization.

**Lumbar Puncture**

There is no mandatory requirement for lumbar puncture in first or subsequent febrile seizures. The risk of meningitis is the same for first and subsequent simple febrile seizures and is approximately 0.3%. The same criteria should be used to determine the need for lumbar puncture in these children as in other febrile children. Complex febrile seizures (i.e. prolonged, multiple, or focal) have a higher rate of underlying intracranial pathology (including meningitis).

Lumbar puncture should be performed in all children with fever and a convulsion < 6 months unless contraindicated as below. Any child with a purpuric or other suspicious rash should also have an LP unless contraindicated. There should be a lower threshold for lumbar puncture in children who are on oral antibiotics (as they may have partially treated meningitis). Diazepam (given to terminate a seizure) can modify any signs of neck stiffness or other meningism.

A lumbar puncture should not be performed if the GCS is 8 or less, if there are persistent focal neurological signs, or if the child is showing signs of clinical deterioration in conscious level or perfusion during the period of observation.

If meningitis cannot be excluded clinically and a lumbar puncture is contraindicated, the child should be admitted and started on appropriate therapy for bacterial meningitis. In addition, IV
Acyclovir should be started in those children who have had contact with herpes simplex, or who have focal neurology or had focal seizures.

**Advice to Caregivers**

Caregivers need to have clear advice regarding expected clinical progress and what to do in the event of a future convulsion. Information may be poorly recalled when offered under the stress of the initial presentation. A copy of the parent information leaflet should be given and caregivers advised to return if clinical progress is not as expected. Follow-up during the next 24 hours is advisable to assess progress of the child’s illness and to allow caregivers the chance for further discussion. This is best done by the GP.

**Fever Control**

There is no evidence that meticulous dosing of antipyretic or other measures to lower core temperature are effective at preventing febrile convulsions. Antipyretics (paracetamol or ibuprofen) can be used to provide comfort to a febrile child. Tepid sponging, baths and fans are largely ineffective in lowering core temperature and should not be overdone. These measures should be limited to a cool face cloth or fan sufficient to keep the child feeling comfortable. Clothing should be minimal, either a nappy alone or a light outer layer depending on the ambient temperature.

**Long Term Issues**

The recurrence rate varies depending on the age of the child, family history of febrile seizures and type of febrile seizure. The younger the child, the more likely they are to have a future febrile convulsion. A child who is 1 year old at the time of the first convulsion has a 50% chance of one or more recurrences. A child who is 2 years old has a 30% chance of recurrences.

Children with very frequent ‘febrile’ seizures should be investigated for alternative diagnoses eg epilepsy or arrhythmia.

Several factors influence the risk for the child of future afebrile convulsions or epilepsy. These include:

1. A family history of epilepsy
2. Any neuro-developmental problem in the child
3. Atypical febrile convulsions (very prolonged or focal).

- In the absence of any of these risk factors, the risk of subsequent epilepsy for a child with febrile convulsions is approximately 1% (approximately the same as the population risk).

- If any one of the risk factors is present, the chance of epilepsy increases to 2%

- With two or more risk factors, the risk is 10%. Children with ≥2 risk factors for later epilepsy comprise about 6% of children seen with febrile convulsions.

Long term anticonvulsant use is not indicated in children with febrile convulsions. Intermittent use of oral diazepam for febrile illnesses is also generally ineffective, as frequently the convulsion is the first sign of illness. This approach can also lead to children being on diazepam much of the time, given the frequency of febrile illnesses in this age group.
Children who have recurrent prolonged convulsions (which are rare) may benefit from having buccal midazolam or rectal diazepam available at home, which their parents can administer if a convulsion does not cease spontaneously. Discuss the need for emergency medication with a consultant. Options include;

a. Buccal midazolam
   - 0 - 16kg Dose of 0.2 to 0.3 mg/kg/dose
   - 16 – 32 kg Dose of 5mg
   - 32kg + Dose of 10mg

b. Rectal diazepam
   - 0.3-0.5 mg/kg/dose. (max dose usually 10mg)
   - Onset of action 5-10 mins.
   - Delayed respiratory depression may occur after rectal administration.

Dose may only be repeated under medical supervision.

References


