Febrile convulsions

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James talks to Arjun Rao about febrile convulsions, which typically occur in children between 3 months and 6 years of age.

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About Dr Arjun Rao

Dr Arjun Rao is a Staff Specialist in Paediatric Emergency at Sydney Children's Hospital, Randwick and a Conjoint Lecturer in Medicine at The University of NSW. He is a member of Advanced Paediatric Life Support, Australasia and regularly instructs on both provider and instructor courses. Arj is involved in Simulation training at Sydney Children's Hospital, Randwick and completed the Harvard Institute for Medical Simulation "Simulation as a Teaching Tool" course at the Australian Institute of Medical Simulation in 2012. He also has an interest in online learning and been involved in a number of online education projects. Arjun completed his medical degree at the University of Sydney and FRACP in Paediatrics and Paediatric Emergency at Royal Australian College of physicians.

Febrile Convulsions

With Dr Arj Rao, Emergency Paediatrician, Sydney Children's Hospital, New South Wales, Australia

Introduction

Febrile convulsions are common. Febrile convulsions typically occur in children between 3 months and 6 years of age. Once more sinister causes are ruled out, most children do not require further investigations and management.

Case 1

14-month-old BIBA. Seizure at home that lasted 3 minutes and the child now has a fever and is sleepy.

1. Initial approach to a child with a seizure

- **Start with ABC approach and a global assessment.**
- **Child in bed, monitored and triaged to a high category.**
- **Once stable, start with history and always start with open ended questions to describe the event and don't interrupt parents.**

- Acknowledge how scary it was. Clarify points about the history later.
- Was the onset of the seizure witnessed or not?
- Was the child hot? Was the whole body stiff or shaking? Go through one limb at a time. Give the parents time to remember, don't keep on interrupting. Ask the parents to demonstrate what happened. Was it a seizure or a rigor?
- What did the child's eyes do? Was there any colour change?
- How long did it go for? It can feel longer than it actually was.
- Ask the parents about the environment the child was in rather than just focusing on what the child was doing. Helps them visualise the event.
- What happened when the seizure stopped? Have they returned to normal following the episode?
- Ask about the cause of the fever, have they had a runny nose, vomiting, diarrhea or a sick contact?
- Ask whether there has been a family history of febrile convulsions.

2. Classic history of febrile convulsions

- Often first sign of a fever. Parents often don't know the child is unwell.
- Can be either:
    - unwitnessed (hear a noise from the bedroom) or
    - witnessed (child becomes stiff, eyes role back, generalized convulsion with clonic phase then floppy and unresponsive phase).
- Many parents will say they thought their child was going to die. This can be very difficult to witness for the parents.

3. Examination

- Two fold focus
    - assess neurological function
    - search for cause of fever
- Stand at end of the bed and get as much information as possible from observation.
- If on monitoring note HR, saturations, can count respiratory rate without touching them.
- Then assess neurological status.
- If the child is alert, engage and play with them. The best way to assess neuro function in a child is to play with them and assess their hand movements, pupils and fontanelle.
- If the child is asleep try to do as much as possible during this time.
- Do a thorough examination including chest, listen to heart sounds, abdomen and ENT looking for source of fever. Expose them fully and look for rash.

- Examine bones and joints for osteomyelitis or joint infection.

4. Neurological exam in children

- AVPU is more useful than GCS. Alert, Verbal. Pain, Unresponsive.
- If sleepy, try to rouse them.
- If seizure just finished then they may be in the post ictal phase.

5. What to worry about

- Neck stiffness, this can be subtle.
- How do they wake up from a seizure? Parents will say they are “back to normal” after a period of 30 minutes. Otherwise worry about encephalitis or meningitis and consider the need for further investigation.

6. Differential diagnosis for febrile convulsions

- Decide if it was a seizure rather than rigors. This may not be easy.
- Meningitis.
- Encephalitis.
- Metabolic condition with illness that has made them develop a fever. Check BSL.
- Other differentials that can cause a fever e.g. viral vs bacterial causes.

7. How to decide if it is a ‘simple febrile convulsions’

- 1 month to 6 years by definition but mostly from 3-5 months to 6 years.
- Not caused by infection to CNS.
- Neurologically and neuro-developmentally normal.
- No first degree relative with epilepsy.
- Generalised seizure.
- Under 15 minutes in duration.

8. Investigations

- Generally do not need investigations if the child recovers fully, especially if have a viral cause for the fever.
- Might consider:
    - FBC (WCC elevation)
    - EUC (derangement of Na)
    - BSL
    - If febrile, then consider blood culture and urine culture
      o LP difficult decision but might consider if signs of meningisim. May be contraindicated if encephalopathic.

9. Treatment

- Empirical treatment will vary on the setting.
- Meningitis without encephalopathy with broad spectrum antibiotics.
- If encephalopathic and drowsy – add acyclovir.

10. What is the difference between febrile child vs child with febrile convulsions?

- If you take a population of children with fever vs children with a fever who had febrile convulsions, the children with febrile convulsions have a higher chance of having meningitis but the risk in both these groups is incredibly low.
- The risk of meningitis in an otherwise healthy 14-month-old with a fever is less than 1% and it is similarly low for children who have febrile convulsions. This is as a result of change in immunisation status.
- There is a huge drop off in bacterial meningitis since vaccinations especially Hib vaccine.

11. Do children with febrile convulsions need admission?

- Most children will not need an admission but it depends on the hospital.
- Paediatric follow up is generally not required unless there are complex features but if you are unsure it is always better to admit a child than to send them home.

- Also depends on the time of day and how concerned the parents are.

12. If the child is safe for discharge what do you tell the parents?

- Give written information. Good factsheets.
- Seizure due to temperature. Cannot predict what will happen if they get a fever again but if they have had one febrile convulsion then they are more likely to have another one.
- It won't damage their brain. They will go back to normal function.
- Call an ambulance if more than 5 minutes.
- Remove dangerous things from the child's surroundings.
- Do not put anything in the child's mouth.
- Roll the child on their side.

13. Is there a role of paracetamol in treating febrile convulsions?

- There is no evidence to show that paracetamol prevents febrile convulsions.
- Not sure why febrile convulsions happen. This could be due to how quickly the child's temperature rises.
- Temperature rises quickly and often febrile convulsion is the first sign of fever so paracetamol does not have a role.
- If the child is febrile and irritable then give them paracetamol to settle them.

14. What are the chances of it happening again?

- A 30% chance that the child will have another febrile convulsion with a fever, usually within the next year.
- The further you get away from the seizure, the less likely it is to recur.

Case 2

The next morning the same child comes in again with another seizure. How is this presentation different? Do we need to approach this case in a different way?

1. Features of a complex febrile convulsion

- Focal seizure
- Prolong (>15 min)
- Multiple seizures in one illness episode.
- But management is still the same for complex febrile convulsions. Children usually recover fully. Admit the child for 24hrs as the parents will be worried and you will need to rule out other diagnoses.
- More likely to carry out investigations.

2. Follow up for complex seizures

- Depends on the hospital where you work.
- Visit a local doctor with good paediatric experience.
- Not all these children need an EEG but if they have multiple recurrent seizures then it might be a good idea to get a baseline EEG.
- Follow up with paediatrician if local doctor is uncomfortable with treating the child.

3. Risk of epilepsy in a child with a febrile convulsions

- The majority will not get epilepsy.
- All children have a 1.4% chance of developing epilepsy.
- A child with a febrile convulsion has an increased risk from 1.4% to 2.4%. It might be that children who get epilepsy are more likely to have convulsions in the first place. The more complex features, then the more likely to develop epilepsy.

Take home messages

- History is key. Be careful not to label it as ‘febrile convulsion’.
- Let the parents talk without interrupting.
- Do not forget to keep an open mind for differentials. Look for atypical features.
- Give parental education, safety and discharge information.

References

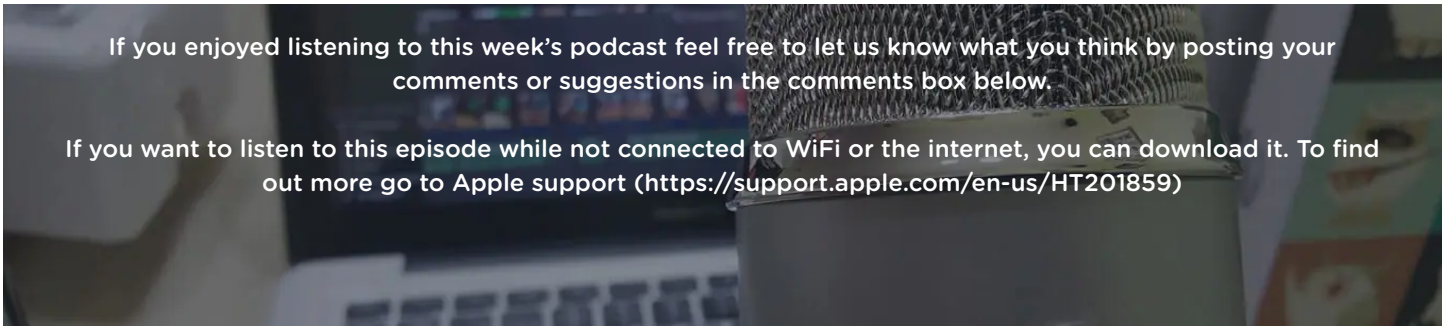
Fever – Febrile convulsions fact sheet

Clinical Practice Guidelines – Febrile convulsion(Royal Children’s Hospital Melbourne)

Related Podcasts

- The sick neonate
- The sick child
- Assessing and treating paediatric patients

Tags: #emergency department,#epilepsy,#febrile child,#febrile convulsions,#fever,#meningitis,#neurology,#paediatrician,#paediatrics,#rigor,#seizure,#the sick child



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