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## Febrile Seizures

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### CASE REPORT

**Patient:** A 9-month-old baby boy was brought by his parents to the Pituruh Community Health Center with a seizure complaint from approximately 1 hour before entering the Community and Primary Health Care Center. Seizures only occurred one time. The length of seizures was about 10 minutes. During the seizures the patient's hands clenched and both upper arms and both lower legs trembled like when people are shivering. The eyes glared upward, and the patient's mouth was like a grin, but no foam came out from the patient's mouth and the tongue was not bitten. When the seizures happened the patient was unconscious and after the seizures the patient was conscious but his body became weak. The patient's mother confessed before the seizure the patient had a high fever. Fever occurred since approximately 1 day before entering the Community Health Center (*Community and Primary Health Care Center*). Fever appeared suddenly and was treated with a form of puyer obtained from Community and Primary Health Care Center during measles immunization 1 day before patient's fever. But after that, the patient had a seizure. During this time the patient's parents discipline was to carry out basic immunization for patients on schedule. The patient did not vomit, and had no diarrhea but a dry cough while his mother had coughed since a month ago and had never recovered.

Parents of the patient were anxious about whether this febrile seizure will later lead to disability. The patient's mother said, "I immediately take the child to the Community and Primary Health Care Center for fear if the seizures recur and want to know the cause of febrile seizures. If there is no complete laboratory examination at the Community and Primary Health Care Center, I am ready to be referred to the hospital as long as I know the cause of my child's illness so I can better take care of my child's health". The patient's mother was worried if the seizure causes a decrease in the intelligence (IQ) of her child. When asked whether the mother already knew the

possibility of her child's illness and further examination and the prognosis of the febrile seizures, the mother answered she already knew somethings but only a little.

### Biological Diagnosis and Psychosocial Diagnosis

The biological diagnosis is simple febrile seizures and bronchitis. Psychosocial diagnosis is a concern that seizures can cause disability.

### PROBLEMS

Problems experienced by patients involved the need for management of the febrile seizures immediately, carefully and precisely and with consideration of the patient's safety. In addition, health workers are expected to respond to parents' worries about the 'sequelae' of the febrile seizures.

### DISCUSSION

#### 1. Evidence-Based Management for Febrile Seizures in Children

This is a review of the scientific basis derived from various sources, about Fever Seizures in Children. The doctor may use the information below to give some explanation to the patient's parents.

According to information extracted from the Fever Seizure Consensuses, febrile seizures occur in 2-4% of children aged 6 months - 5 years. Seizures with fever sometimes occur in infants <1 month excluding febrile seizures. If a child <6 months or >5 years has a febrile seizure, it may be a central nervous system infection or epilepsy that may occur with a fever. Children who have experienced seizures without a fever, and then seizures during a fever, are not classified into febrile seizures<sup>1</sup>.

Febrile seizures are divided into 2 types:

- a. Simple febrile seizures, that is:
  - A febrile seizure that lasts a short time, <15 minutes and generally stops by itself. Seizures are generalized tonic

or clonic seizures, with no focal movement. Febrile seizures do not recur within 24 hours. This type of seizures accounts for 80% of all febrile seizures

- b. Complex fever seizures, that is:  
Seizures with one of the following features:
- 1) Seizures lasting > 15 minutes,
  - 2) Focal or partial seizures of one side or generalized seizures preceded by partial seizures,
  - 3) Repeats or more than once in 24 hours<sup>1</sup>.

Febrile seizures are more common when a family has a history of febrile seizures, with about 20% between siblings and 10% among elderly<sup>2</sup>. Neurological defects or abnormalities as a result of febrile seizures are very rarely reported. Both mental and neurological development are generally normal in previously normal patients. Other studies have retrospectively reported neurologic abnormalities in a small proportion of cases, and this disorder usually occurs in cases with convulsive seizures or recurrent seizures in general or focal episodes<sup>1</sup>.

- a. Deaths due to febrile seizures have never been reported. Deaths are avoided with rapid and appropriate seizure handling, and the prognosis is usually good. One study found KDS (Simple Febrile Seizures) mortality was 0.46% s/d 0.74%<sup>3</sup>.
- b. The possibility of recurrence is approximately 25 s/d 50% in the first 6 months of the first attack<sup>3</sup>.
- c. Epilepsy  
Epilepsy rate was found to be 2.9% of KDS and 97% of epilepsy were provoked by fever. The risk of epilepsy faced by a child after KDS disease depends on the following factors:
- 1) History of seizures without fever in the family,
  - 2) Abnormalities in progression or abnormality before the child has KDS,
  - 3) Seizures lasted a long time or focally.

If there are at least 2 of the 3 factors above, then the probability of having a seizure without fever is 13%, compared to only one or none of the above<sup>3</sup>.

- d. Hemiparesis usually occurs in patients who have long seizures (lasting more than half an hour) with both generalized seizures and focal seizures. Focal seizures that occur are in accordance with the paralysis. At first, paralysis is flaccid, then 2 weeks later there arises a state of spasticity. It is estimated that more than 0.2% of KDS develop hemiparesis after a long seizure<sup>3</sup>.
- e. Mental Retardation  
It was found that out of 431 patients with KDS there were no IQ abnormalities, while febrile seizures in children who previously had developmental disorders or neurologic abnormalities found a lower IQ. If febrile seizures are followed by recurrence of seizures without fever, the likelihood of mental retardation is 5x greater<sup>3</sup>.

In cases of febrile seizures, laboratory tests are not routinely performed but can be performed to evaluate the source of febrile infections or other conditions such as dehydration, or gastroenteritis with fever. Laboratory examinations may include peripheral blood, electrolytes,

and blood sugar tests<sup>1</sup>. Febrile seizures occur in 2% to 5% of children aged 6 months to 5 years<sup>4</sup>, with the peak incidence at 18 months and low incidence before 6 months or after 3 years<sup>5</sup>. Almost 5% of children under 16 years have experienced at least one febrile seizure in their life<sup>6</sup>. More than 90% of people with febrile seizures occur in children under 5 years of age<sup>7</sup>.

## 2. Person-centered care

A febrile seizure is a recurring condition for which the doctor must establish good communication with the patient. Doctors can do alloanamnesis about patient complaints, explore the family's perceptions related to the disease, explore family perceptions about the patient's illness, and how the family faces the condition of the patient's illness. We discussed with the patient's family about the problem in this case. Doctors should be able to understand the parents of patients suffering from febrile seizures who are worried about their child's illness. The anxiety should be reduced by convincing them that febrile seizures can generally be normal again and provide a way of handling the seizures. It is important to provide understanding to the patient's parents about the need for further treatment because of the possibility of recurrent seizures as well as finding the cause of the seizures and need to follow up the disease. Patients need proper evaluation to find the cause of seizures. Some of the following questions can serve for doctor's guidance in evaluating Fever Seizures in Children:

- a. Is there an infection?
- b. Are there electrolyte abnormalities in the blood?
- c. Is there a structural problem in the brain?

Often there is no obvious cause why a first seizure occurs, and a CT or MRI scan of the brain as well as an EEG (electroencephalogram) may be necessary to find the cause. If a seizure occurs as soon as the fever has started or when the temperature is relatively low, the risk of recurrence is higher<sup>8</sup>.

The intellectual ability (IQ) and other aspects of brain development do not seem to be affected by febrile seizures, whether it is simple, complex, or recurrent seizures or whether it is due to infection or after immunization. Epilepsy is more common in children who have suffered a febrile seizure. However, a child's risk of epilepsy after having a simple febrile seizure is only slightly higher than a child who has never had a febrile seizure<sup>9</sup>.

At the time of the consultation, the mother stated that his grandmother was very protective of the patient so the child could not get sick. The grandma forbids the patient to play too long, makes him eat a lot and he should not be too tired. While doing home visits, his mother told me the patient was rarely sick. The knowledge of the patient's parents (father) about febrile seizures is also very limited, telling that febrile seizures are diseases that can later cause epilepsy and the child becomes stupid. According to his grandmother, the patient's illness is due to heredity where there are nerve abnormalities.

From this case, the assessment was done in the form

of family functions with the Family APGAR, namely Adaptation, Partnership, Growth, Affection, and Resolve. APGAR component definitions are as follows: 'Adaptation' is the use of resources from within and outside the family to solve problems when the family balance is disrupted during a crisis. 'Partnership' is to discuss decision making and foster a sense of responsibility by family members. 'Growth' is physical and emotional maturity, and self-fulfillment achieved by family members. 'Affection' is a sharing and caring affection between family members. Finally, 'Resolve' is the commitment of providing time with other family members for physical and emotional closeness<sup>10</sup>. It also always involves decisions to share welfare and space. Assessment of APGAR questionnaire by the patient got score 9 which showed excellent family function. Here are the APGAR family assessment results based on the questionnaires answered by the patient's mother: 1) I am satisfied with the help I received from my family when facing the problem, score 2; 2) I am satisfied with the way the family tries to discuss things and in solving problems, score 1; 3) I feel the family can accept my desire to do a new activity or make changes in my lifestyle, score 2; 4) I feel satisfied with the way the family expresses a sense of affection and responds to my feelings of anger, sadness and affection, score 2; and 5) I feel satisfied with the amount of time with family and spend time together, score 2. Score 2 is selected if almost always, score 1 if sometimes, and score 0 if almost never. Total score of 7-10 indicates excellent family function, a score of 4-6 indicates moderate family dysfunction, and a score of 0-3 indicates poor family dysfunction. The total score of this case is 9, meaning excellent family function.

Family Doctors need to do the following:

- a. Present to parents and family of the patient about the results of the examination that has been done at the Community and Primary Health Care Center, while providing guidance on the follow-up plan of patient care and therapy.
- b. Provide education and counseling, explaining that infant fever and allergic cough is a treatable disease so they should not use alternative medicine.
- c. Include family members and parents in education and counseling about the patient illness.
- d. Give referrals to the hospital for further handling of seizures and for referral back from the hospital when the patient's follow-up has been completed.
- e. Record all information and actions of handling febrile seizures in the medical record.
- f. Suggest parents can always provide febrifuge, anti-allergic medicine at home for first aid.
- g. Deliver information on baby emergency signs at home which indicate they should be taken to a health center or hospital.
- h. Provide an understanding to the patient's parents about the need for further treatment because of the possibility of recurring seizures as well as finding the cause of the seizures and the need to follow up the disease. Provide explanation that patients need additional evaluation to find the cause of seizures and answer the following questions: Is there an infection? Are there electrolyte

abnormalities in the blood? Is there a structural problem in the brain? Explain to the parents that often there is no obvious cause why a first seizure occurs, and a CT or MRI scan of the brain as well as an EEG (electroencephalogram) may be necessary to find the cause.

- i. Recommend making BPJS (Health Insurance) for health financing guarantee.

### 3. Primary Care Management

At the time the patient fever seizure occurs there is need for the doctor to know the condition of the patient's health as a whole by doing anamnesis with physical examination and investigation, and to collaborate with nurses in the treatment of febrile seizures, by giving referrals to the hospital for further handling of seizures and for referral back from the hospital when the patient's follow-up has been completed. Doctors need to record all information and actions of handling febrile seizures in the medical record, and provide information to parents if they have health insurance that the patient gets health care in the hospital for free so parents do not have to worry about hospital financing problem.

On a re-visit or after a referral back from the hospital a doctor should follow up the progression of the illness alert for any recurrence of febrile seizures. There is no sex difference in Febrile Seizures, but the occurrence in Asian populations is higher than other races. Febrile seizures follow a bimodal seasonal pattern and usually reflect peak respiratory infections (November-January) or gastrointestinal infections (June-August). Two-thirds of cases of febrile seizures seen in the emergency department are simple febrile seizures<sup>2</sup>.

### 4. Specific Problem-Solving Skills

After anamnesis, physical examination, and laboratory examination, the doctor can interpret and conclude the results and then plan appropriate medical action for the patient. A child who has a febrile seizure should be seen by a doctor as soon as possible (in the emergency department) to determine the cause of the fever. The recommended treatment is as follows: Give stesolid 10 mg suppository, Install O<sub>2</sub> ½ ltr/min, Give paracetamol Syr 4x1 tsp powder, Give cetirizine Syr 1x1 tard, and Observe patient in ER, if necessary caring for monitoring.

Treatment for long-term seizures usually involves providing anti-seizure medication and monitoring heart rhythm, blood pressure, and breathing. If the seizure stops by itself, anti-seizure medications are not necessary. After a simple febrile seizure, most children do not need to stay in the hospital unless the seizure is caused by a serious infection that requires hospitalization.

After the seizure has stopped, treatment for fever begins, usually by giving per oral or per rectal acetaminophen or ibuprofen<sup>9</sup>.

### 5. Comprehensive approach

Curative treatment is given to overcome febrile seizures with anticonvulsants. Preventative measures prevent

recurring seizures by providing antipyretics immediately whenever a child has a fever, compressing with warm water if fever occurs, and providing anti-seizure medications at home. The family should be educated about the actions to be taken in the event of a seizure at home before being taken to the Community and Primary Health Care Center/hospital. Coordination with health personnel at Community and Primary Health Care Center is needed to assist in the management, promotion and prevention efforts through education and extension efforts at the family and community level. Coordination with health personnel in hospitals should be performed, e.g. for consultation during management, and for consultation before or after referral.

## 6. Community Orientation

Cases of febrile seizures mostly occur in children but people still often do not understand how to deal with fever and febrile seizures. Counseling to the public about the handling of fever in various ways for which one of them is by compress, where the traditional mother's habit of compressing with cold water is not recommended anymore. Compress with warm water is now more recommended<sup>9</sup>.

Further recommendations include counseling about febrile seizures, and actions to be taken if the child has a fever at home, such as keep calm, loosen children's clothing, especially the neck, position the head of the child tilted, clean the vomit or mucus in the mouth or in the nose and do not put something to the mouth, and if they have anti-seizure drugs in the form of rectal suppositories then immediately give appropriate dose as recommended.

## REFERENCES

1. Puspongoro HD, Widodo DP, Ismael S. Consensus management of febrile seizures. Jakarta: IDAI Publishing Agency, 2006; p.1-9.
2. Kimia AA, Bachur RG, Torres A, Harper MB. Febrile seizures: Emergency medicine perspective. *Current Opinion in Pediatrics*. 2015 Jun 1;27(3):292-7.
3. Kliegman RM, Behrman RE, Jenson HB, Stanton BM. *Nelson textbook of pediatrics e-book*. Elsevier Health Sciences. 2007 Aug 15.
4. American Academy of Pediatrics. Steering Committee on Quality Improvement and Management, Subcommittee on Febrile Seizures. Febrile seizures: Clinical practice guideline for the long-term management of the child with simple febrile seizures. *Pediatrics*. 2008 Jun;121(6):1281-6.
5. Sugai K. Current management of febrile seizures in Japan: An overview. *Brain and Development*. 2010 Jan 1;32(1):64-70.
6. Schweich PJ, Zempsky WT. Selected topics in emergency medicine. *Oski's pediatrics: Principles and practice*. 3rd ed. Philadelphia: Lippincott-Raven. 1999:566-89.
7. Arzimanoglou A, Guerrini R, Aicardi J. Epilepsy: overview and definitions. *Aicardi's Epilepsy in children*. Third Edition. London: Lippincott Williams & Wilkins, 2004; p.1-6.
8. Wedro B, Davis CP. Quick guide heart disease: Symptoms, signs, and causes [Internet]. Available from: [www.medicinenet.com](http://www.medicinenet.com)
9. Millichap J. Risk of epilepsy after complex febrile seizures. *Pediatric Neurology Briefs*. 2001 Feb 1;15(2).
10. Smilkstein G. The Family APGAR: A proposal for family function test and its use by physicians. *The Journal of Family Practice*. 1978 Jun;6(6):1231-1239.