

Answers to Pediatric Seizure quiz:

- 1) D. The overall incidence of simple febrile seizures is 2-5% with a recurrence rate of 30%. Patients with a first degree relative with febrile seizures have an increased incidence of 10-20%. This child has experienced a simple febrile seizure and because he is 2 ½ years old he does not qualify for an automatic lumbar puncture. Furthermore, he has no signs of meningitis. An EEG is not indicated for a first time simple febrile seizure. Phenobarbital is typically used for patients with recurrent febrile seizures or complex febrile seizures.
- 2) A. Phenytoin should not be given faster than 1mg/kg/min in a child as cardiac arrhythmias can develop.
- 3) C. Lamotrigine has been associated with Stevens Johnson Syndrome. Fosphenytoin can be given IM and at 3 times the IV rate of Dilantin.
- 4) Simple febrile seizures are defined as a) lasting less than 15 minutes b) only one in a 24 hour period c) Generalized seizure activity d) Age range 6 months-5 years e) No signs of CNS infection.
- 5) Risk factors for febrile seizure recurrence include: age less than 12 months with onset of febrile seizures, temperature less than 40C with febrile seizure, family history of febrile seizures. Some articles also include complex febrile seizures as a risk factor while others do not.
- 6) a) Lorazepam: IV: 0.05-0.1mg/kg
b) Diazepam: rectal: 0.5mg/kg, IV: 0.2-0.3mg/kg
c) Loading dose of phenobarbital: 15-20mg/kg
d) Loading dose of phenytoin: 15-20mg/kg
e) Loading dose of fosphenytoin: 15-20mg phenytoin equivalents/kg
f) Midazolam: rectal: 0.5mg/kg; IV: 0.1mg/kg; IM: 0.2mg/kg
- 7) C. Patients with hyponatremic seizures tend to have lower temperatures than patients with seizures due to other causes. One of the most common causes of hyponatremic seizures is excess intake of free water. This may be due to improper formula preparation. Farrar H et al. (*Hyponatremia as the cause of seizures in infants: a retrospective analysis of incidence, severity, and clinical predictors*. Ann Emerg Med, 1995, 26:42-48) found the following results: 47 patients less than 6 months of age were enrolled. Median seizure duration was longer (30 minutes versus 17 minutes, p=0.007) in patients with hyponatremia, with a greater incidence of status epilepticus (73% versus 36%, p=0.02) Emergency intubation was performed more often in hyponatremic patients than in normonatremic patients (p=0.009). Median temperature was lower in hyponatremic infants (35.5 degrees Celsius versus 37.2 degrees Celsius, p=0.0001) Temperature less than 36.5 degrees C was the best predictor of hyponatremic seizures.
- 8) B. Patients with a single febrile seizure have only a slightly higher incidence of developing epilepsy than children who have not experienced a febrile seizure. Patients who are less than 1 year of age when the first simple febrile seizure occurs, or children who have multiple febrile seizures have a 2-4% risk of developing epilepsy. Children

with one or more complex febrile seizures have a 30-50 fold increase in the incidence of epilepsy as compared to the general population.

- 9) C. In a review article by Warden C et al. (Evaluation and management of febrile seizures in the out-of-hospital and emergency department settings. Ann Emerg Med. Feb 2003; 42:215-222) The following recommendation regarding the performance of a lumbar puncture was made:

In children less than 18 months of age a lumbar puncture should be strongly considered if there is :

- a) a history of irritability or lethargy/decreased feeding b) abnormal appearance or mental status changes after the postictal period c) physical signs of meningitis d) complex febrile seizure e) slow postictal clearing of mentation f) pretreatment with antibiotics.
- b) If these factors are absent, then “a lumbar puncture can be safely deferred.”

- 10) B. Shigella. The classic story is that of a patient who is undergoing an LP for a febrile seizure, who has a diarrheal episode while you are performing the LP!

- 11) A. Overall the most common cause of seizures in children is fever. However, keep in mind that in the first 2-3 days of life the most common cause of seizures is hypoxia or anoxia. In full term and premature infants up to 65% of seizures are due to hypoxic-ischemic encephalopathy.

- 12) Due to immature hepatic function which results in unpredictable phenytoin metabolism, the anticonvulsant of choice in newborns is phenobarbital. Many clinicians will still use benzodiazepines initially to control the seizure while beginning the phenobarbital load.