

A 3-year-old African American boy is brought to the emergency department with sudden onset of difficulty walking. His mother reports that his right hand also seems "clumsy." The boy's past medical history is significant for a hospitalization one year ago for severe upper extremity pain and hand swelling. On physical examination, he has a blood pressure of 90/60 mmHg, heart rate of 120/min, temperature of 36.7° C (98° F), and respiratory rate of 22/min. Which of the following would be most helpful in diagnosing his condition?

- ☐ A. Carotid ultrasonography
- ☐ B. Peripheral smear and reticulocyte count
- ☐ C. Antineutrophil cytoplasmic antibodies
- ☐ D. Temporal artery biopsy
- ☐ E. Lumbar puncture
- ☐ F. Electromyography

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- ☐ A. Carotid ultrasonography [5%]
- ☒ B. Peripheral smear and reticulocyte count [81%]
- ☐ C. Antineutrophil cytoplasmic antibodies [4%]
- ☐ D. Temporal artery biopsy [1%]
- ☐ E. Lumbar puncture [2%]
- ☐ F. Electromyography [6%]

Proceed to Next Item

Explanation:

User Id: [REDACTED]

This child is presenting with signs and symptoms of stroke. Strokes in children are uncommon. When they do occur, they are often the result of a congenital abnormality, infection, or systemic illness. Many childhood strokes are caused by sickle cell anemia, and this is the most likely diagnosis here. (This patient's race, history of dactylitis, and prior pain crisis are all consistent with sickle cell disease.) The exact mechanism underlying strokes in children with sickle cell anemia is not fully understood, but red blood cell adherence to the endothelium, activation of von Willebrand's factor, and hyperviscosity are all thought to contribute.

(Choice A) Carotid ultrasonography is performed to evaluate for carotid stenosis. Carotid stenosis would be an exceedingly rare cause of stroke in a child.

(Choice C) Measurement of serum antineutrophil cytoplasmic antibodies would help evaluate for the presence of vasculitis, a potential cause of stroke in children and young adults. Vasculitis is an unlikely diagnosis in this patient because he does not have other supporting diagnostic signs or symptoms.

(Choice D) Temporal artery biopsy can definitively diagnose temporal (giant cell) arteritis. Temporal arteritis is a rare cause of stroke that tends to affect older adults.

- ☒ B. Peripheral smear and reticulocyte count [81%]
- ☐ C. Antineutrophil cytoplasmic antibodies [4%]
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This child is presenting with signs and symptoms of stroke. Strokes in children are uncommon. When they do occur, they are often the result of a congenital abnormality, infection, or systemic illness. Many childhood strokes are caused by sickle cell anemia, and this is the most likely diagnosis here. (This patient's race, history of dactylitis, and prior pain crisis are all consistent with sickle cell disease.) The exact mechanism underlying strokes in children with sickle cell anemia is not fully understood, but red blood cell adherence to the endothelium, activation of von Willebrand's factor, and hyperviscosity are all thought to contribute.

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(Choice C) Measurement of serum antineutrophil cytoplasmic antibodies would help evaluate for the presence of vasculitis, a potential cause of stroke in children and young adults. Vasculitis is an unlikely diagnosis in this patient because he does not have other supporting diagnostic signs or symptoms.

(Choice D) Temporal artery biopsy can definitively diagnose temporal (giant cell) arteritis. Temporal arteritis is a rare cause of stroke that tends to affect older adults.

(Choice E) Lumbar puncture would be helpful to evaluate meningitis.

(Choice F) Electromyography (EMG) is a procedure that tests peripheral nerve function. It can be helpful in distinguishing nerve disease from muscle disease. It is unlikely that this patient has a peripheral nerve abnormality given the rapid onset, unilaterality, and dramatic nature of his neurologic deficit.

Educational objective:

Sickle cell anemia can cause childhood stroke.

Time Spent: 2 seconds

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