

A 10-year-old boy is evaluated in the emergency department due to progressive lethargy. Four hours ago, he was hit in the head with a baseball while playing at home. He had no loss of consciousness, but his mother states that he appeared "dazed" for several minutes. Approximately 30 minutes ago, the patient experienced headaches associated with nausea and 2 episodes of vomiting. His mother reports that he is currently "not acting right." On physical examination, the child is somnolent and moans with painful stimuli. A non-contrast CT scan of his head is shown below.



Which of the following is the most appropriate next step in management of this patient?

- ☐ A. Cerebral angiogram
- ☐ B. Emergent neurosurgical evacuation
- ☐ C. Intravenous dexamethasone and serial examinations
- ☐ D. Intravenous mannitol and serial examinations
- ☐ E. MRI of the brain with contrast
- ☐ F. Observation and repeat CT scan in 24 hours

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Which of the following is the most appropriate next step in management of this patient?

- ☐ A. Cerebral angiogram [0%]
- ☒ B. Emergent neurosurgical evacuation [94%]
- ☐ C. Intravenous dexamethasone and serial examinations [1%]
- ☐ D. Intravenous mannitol and serial examinations [4%]
- ☐ E. MRI of the brain with contrast [0%]

A. Cerebral angiogram [0%]

- ☒ B. **Emergent neurosurgical evacuation** [94%]
- ☐ C. Intravenous dexamethasone and serial examinations [1%]
- ☐ D. Intravenous mannitol and serial examinations [4%]
- ☐ E. MRI of the brain with contrast [0%]
- ☐ F. Observation and repeat CT scan in 24 hours [0%]

Proceed to Next Item

Explanation:

User Id: [REDACTED]



Epidural hematoma is most common in children/adolescents and occurs as a result of **traumatic head injury**, typically following a blow to the skull with fracture of the sphenoid bone. This frequently leads to tearing of the middle meningeal artery, resulting

Epidural hematoma is most common in children/adolescents and occurs as a result of **traumatic head injury**, typically following a blow to the skull with fracture of the sphenoid bone. This frequently leads to tearing of the middle meningeal artery, resulting in the buildup of blood between the dura mater and overlying skull.

Patients may experience a brief loss of consciousness followed by a lucid interval. Hematoma expansion leads to signs of **increased intracranial pressure** (eg, headache, nausea/vomiting, altered mental status). CT scan of the head typically reveals a hyperdense **biconvex** lesion that **does not cross suture lines** (red arrow). There may also be an associated midline shift due to mass effect. Symptomatic patients with focal deficits or signs of intracranial hypertension require emergent **neurosurgical hematoma evacuation** as treatment delay may lead to death secondary to brain herniation.

(Choice A) Cerebral angiography is a useful diagnostic tool for identifying cerebral aneurysms and arteriovenous malformations; however, it usually is not indicated in the acute management of an epidural hematoma.

(Choice C) Intravenous corticosteroids (eg, dexamethasone) may be indicated in patients with intracranial hypertension due to brain tumor or abscess; however, it does not typically play a role in the management of intracranial hemorrhage.

(Choice D) Intravenous mannitol is an osmotic diuretic that can reduce brain volume in patients with elevated intracranial pressure; however, this patient has an expanding epidural hematoma with early features of uncal herniation requiring emergent neurosurgical evacuation.

(Choice E) MRI of the brain without contrast can be used as an adjunct to CT scan in the evaluation of an epidural hematoma if there is strong clinical suspicion of epidural hematoma but no clear evidence on CT scan.

(Choice F) Close observation and serial (every 6-8 hours) CT scans may be appropriate in patients with a small epidural hematoma and minimal neurologic signs.

Educational objective:

Epidural hematoma is most common in children/adolescents and occurs as a result of traumatic head injury, which leads to tearing of the middle meningeal artery and bleeding between the dura mater and skull. CT scan of the head typically reveals a hyperdense biconvex lesion that does not cross suture lines. Symptomatic patients require emergent neurosurgical hematoma evacuation.

References:

1. [Extradural haematomas in children: a 10-year review.](#)

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References:

1. [Extradural haematomas in children: a 10-year review.](#)
2. [Images in clinical medicine. Traumatic epidural hematoma.](#)

Media Exhibit

hematoma

Epidural hematoma	
Pathogenesis	Trauma to sphenoid bone with tearing of middle meningeal artery
Clinical features	<ul style="list-style-type: none"> Brief loss of consciousness followed by lucid interval Hematoma expansion leads to ↓ consciousness & ↑ intracranial pressure (eg, headache, nausea/vomiting)
Diagnosis	Head CT: Biconvex (lens-shaped) hyper-density that does not cross suture lines
Treatment	Urgent surgical evacuation for symptomatic patients

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