

DIAGNOSTIC CHALLENGE

Answer

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The answer is B: Right middle cerebral artery thrombosis and L2 Chance fracture. Although the radiolucent line through the body of L2 represents a Chance fracture, this injury does not explain the right hemiparesis (corticospinal tract deficits). Results of the head CT revealed increased density in the right middle cerebral artery associated with loss of grey/white matter differentiation, indicative of thrombotic stroke in evolution (Fig. 1). A CT scan of the lumbar spine confirmed the Chance fracture at L2, but no intrusion of fracture fragments into the spinal canal. The abdominal CT was unremarkable. A magnetic

resonance angiogram, performed to determine the cause of the middle cerebral artery thrombosis, revealed extensive occlusion of the right carotid artery, suggesting carotid artery dissection (Fig. 2, Fig. 3).

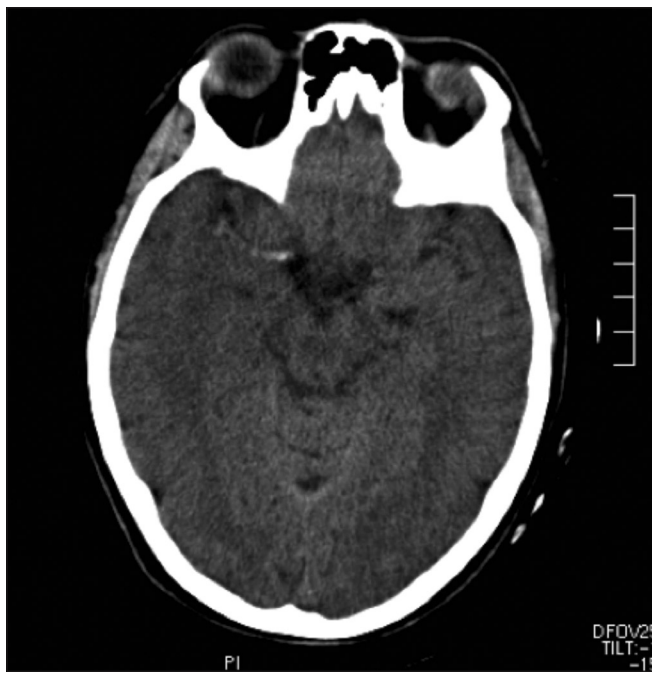


Fig. 1. CT of the head, showing hyper-dense right middle cerebral artery.

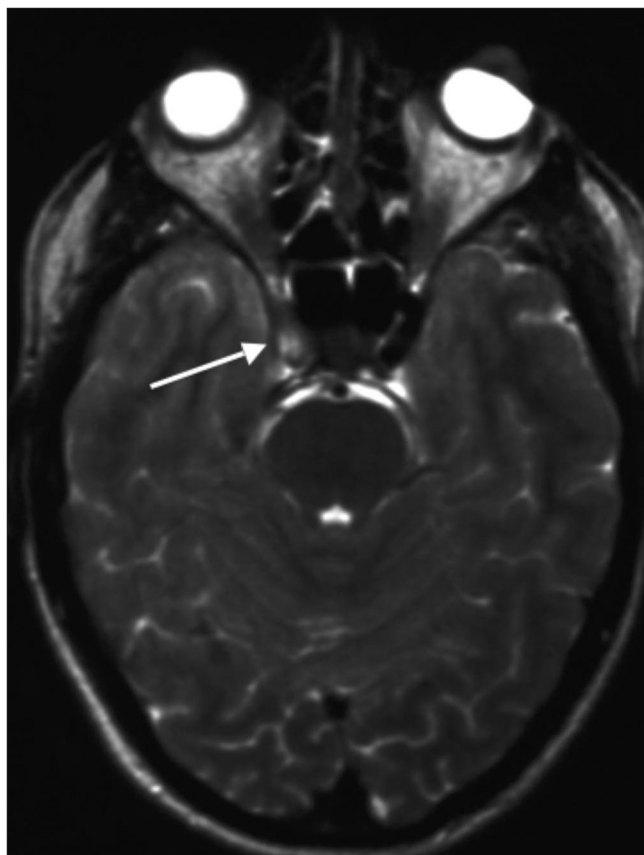


Fig. 2. Axial T2 weighted turbo spin echo sequence. This shows absence of signal void representing flow in the right intracavernous internal carotid artery, which has been replaced by hyperintense acute thrombus (arrow).

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The patient was transferred to a neurologic intensive care unit at another hospital, where anticoagulation commenced. Despite this therapy, she developed a dense left hemiplegia. Later she underwent surgery to stabilize her lumbar spine and, ultimately, she required physical rehabilitation for her hemiplegia.

Teaching points

In 1948, the British radiologist G.Q. Chance described a traumatic spinal injury characterized by “horizontal splitting of the spine.” This pattern of injury, subsequently referred to as a Chance fracture, is usually associated with 2-point (lap belt) restraint use by motor vehical accident victims.¹ The mechanism of injury is a distraction force ap-

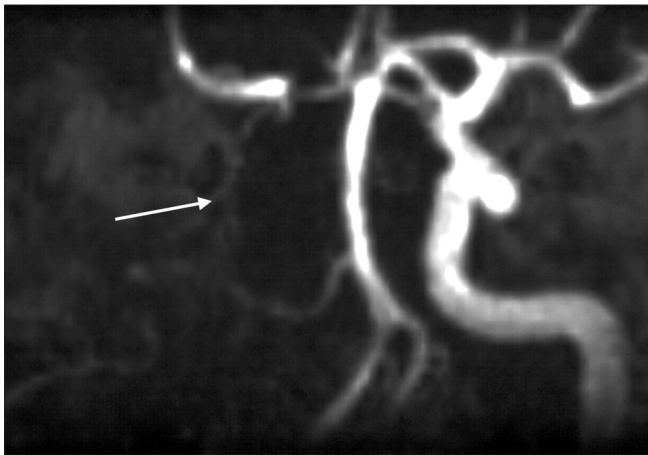


Fig. 3. Time of Flight magnetic resonance angiogram coronal maximum intensity projection. Demonstrates absence of flow within the whole of the right intracranial internal carotid artery (arrow). The right middle cerebral artery fills via collateral flow from the anterior communicating artery.

plied in flexion, which splits the vertebral body from posterior to anterior. Chance fractures are often associated with retroperitoneal and abdominal visceral injuries, especially in children.

Carotid artery dissection due to blunt neck trauma, while uncommon, can lead to devastating strokes.² Carotid dissection has been associated with the use of the diagonal shoulder belt in accident victims.³ The combination of blunt trauma to the neck from the diagonal seat belt, and the distraction injury from the patient’s lap belt led to the 2 uncommon injuries seen. We are often reminded to find one diagnosis that explains multiple physical findings (Ockham’s razor), but in trauma, there are often multiple diagnoses, some of which may be occult. Physicians treating trauma patients need to remember that when one pathophysiologic process doesn’t explain all of the physical findings, a search for another process should be initiated.

Competing interests: None declared.

References

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