

A 69-year-old man is evaluated hours after undergoing elective repair of a descending thoracic aortic aneurysm. He has weakness in both lower extremities and urinary retention, which were not present immediately after the procedure. The surgery was complicated by significant blood loss and required multiple transfusions. The patient has a history of hypertension, hyperlipidemia, type 2 diabetes mellitus, and coronary artery disease. He also has 70% stenosis of his right carotid artery. Neurologic examination shows flaccid paraplegia and loss of pain sensation over the lower extremities. Vibratory sensation is intact. Upper-extremity examination shows no abnormalities. Which of the following is the most likely cause of his neurologic dysfunction?

- ☐ A. Epidural hematoma compressing the spinal cord
- ☐ B. Lumbar plexopathy
- ☐ C. Postoperative ischemic stroke
- ☐ D. Spinal cord infarction
- ☐ E. Vertebral compression fracture

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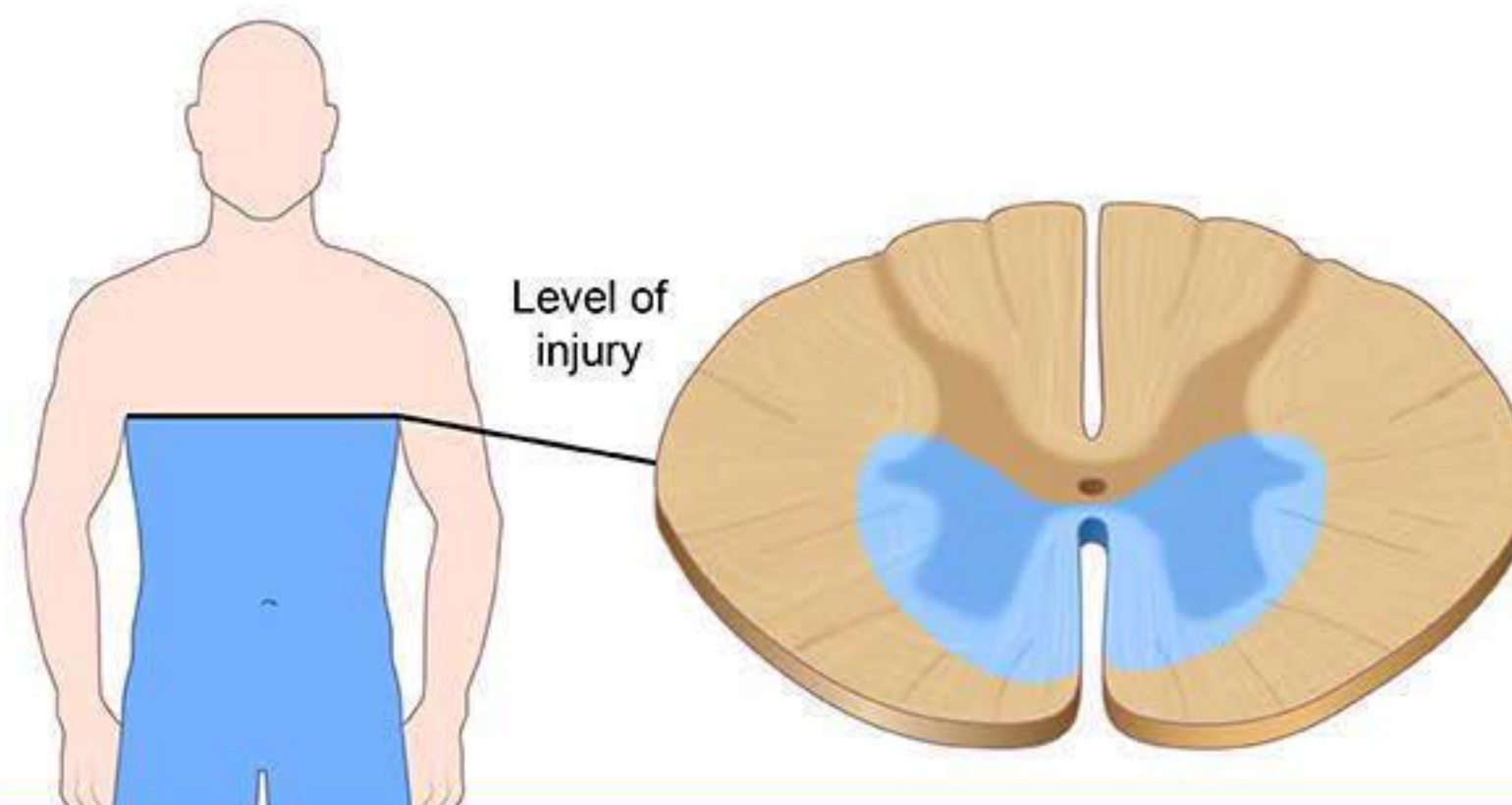
- ☐ A. Epidural hematoma compressing the spinal cord [14%]
- ☐ B. Lumbar plexopathy [5%]
- ☐ C. Postoperative ischemic stroke [10%]
- ☒ D. **Spinal cord infarction** [70%]
- ☐ E. Vertebral compression fracture [1%]

Proceed to Next Item

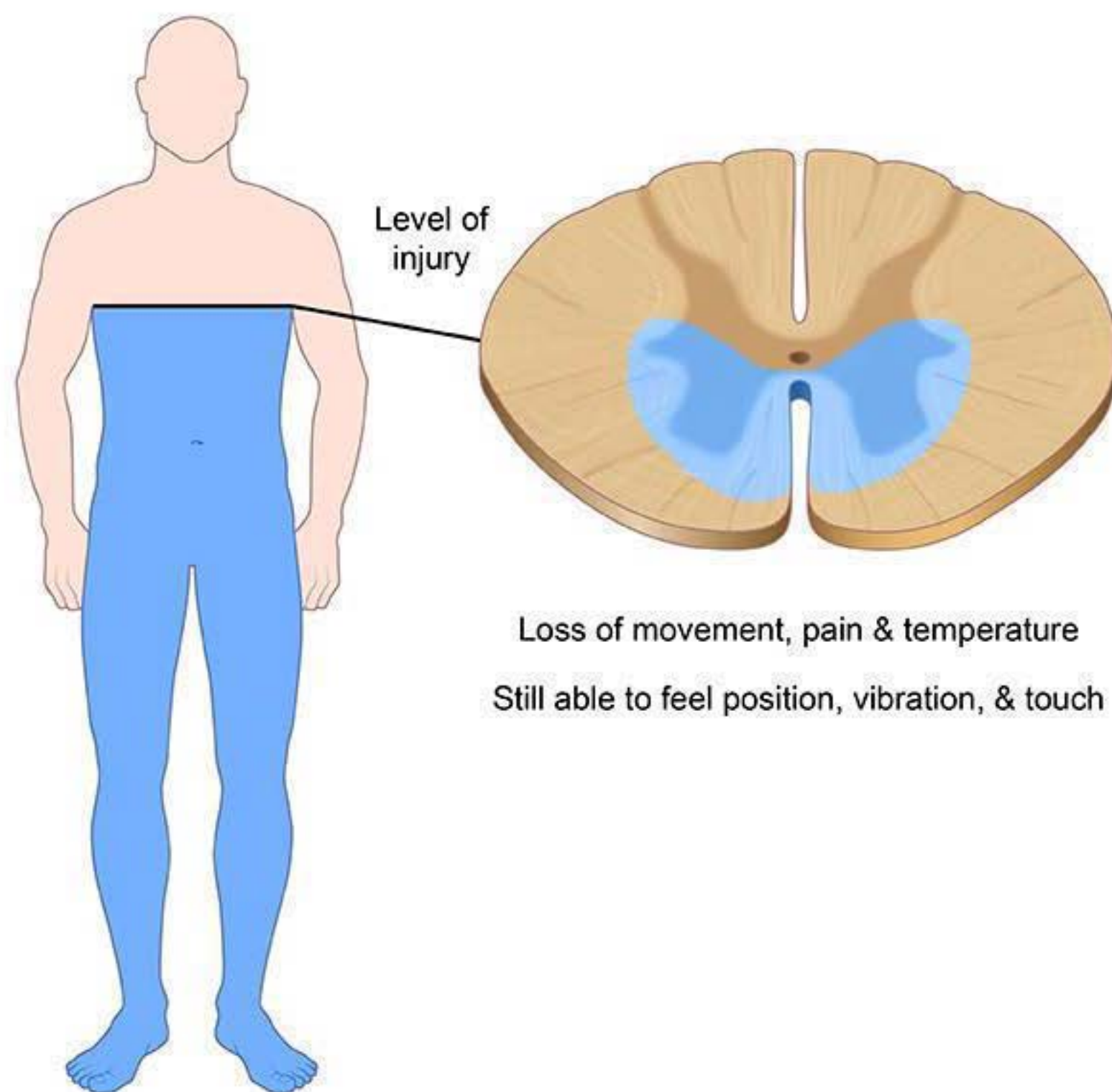
Explanation:

User Id: [REDACTED]

Anterior cord syndrome



Anterior cord syndrome



Loss of movement, pain & temperature
Still able to feel position, vibration, & touch

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This patient has **anterior spinal cord syndrome** due to spinal cord infarction, which can be a complication of thoracic aortic aneurysm repair. The anterior spinal artery (ASA) supplies the anterior two-thirds of the **spinal cord**, including motor tracts (eg, anterior corticospinal tract) and sensory tracts involved in pain/temperature sensation (eg, spinothalamic tract). The ASA is particularly dependent on blood supply from the radicular arteries that originate from the thoracic aorta, such as the artery of Adamkiewicz. Thoracic aortic surgery can result in reduced blood flow through the radicular arteries (eg, from aortic cross-clamping and/or systemic hypotension) and consequently lead to anterior spinal cord infarction.

Patients typically have abrupt onset of bilateral flaccid paralysis and loss of

radicular arteries that originate from the thoracic aorta, such as the artery of Adamkiewicz. Thoracic aortic surgery can result in reduced blood flow through the radicular arteries (eg, from aortic cross-clamping and/or systemic hypotension) and consequently lead to anterior spinal cord infarction.

Patients typically have abrupt onset of bilateral flaccid paralysis and loss of pain/temperature sensation below the level of injury; the **flaccid paralysis is due to spinal shock**. **Upper motor neuron signs** such as spasticity and hyperreflexia subsequently develop over days to weeks. Symptoms of bowel and bladder dysfunction (eg, urinary retention) can result from autonomic dysfunction due to involvement of the intermediolateral cell column and its descending tracts. **Vibration and proprioception are preserved** as the dorsal column of the spinal cord is usually not affected.

(Choice A) Epidural hematoma is less likely in this patient as it is not a common complication of aortic aneurysm repair and the patient does not have a coagulopathy.

(Choice B) Lumbar plexopathy is a peripheral neuropathy characterized by asymmetrical focal weakness, numbness, and paresthesias due to involvement of multiple adjacent nerve roots.

(Choice C) Ischemic stroke due to right carotid artery atherosclerosis usually presents with the abrupt onset of contralateral neurologic deficits, not bilateral deficits as seen in this patient.

(Choice E) Acute vertebral compression fracture can occur in older men with osteoporosis but is more common in post-menopausal women. Patients classically present with acute back pain after bending, coughing, lifting, or a fall. Myelopathy due to retropulsion of bone fragments into the spinal canal is a rare complication.

Educational objective:

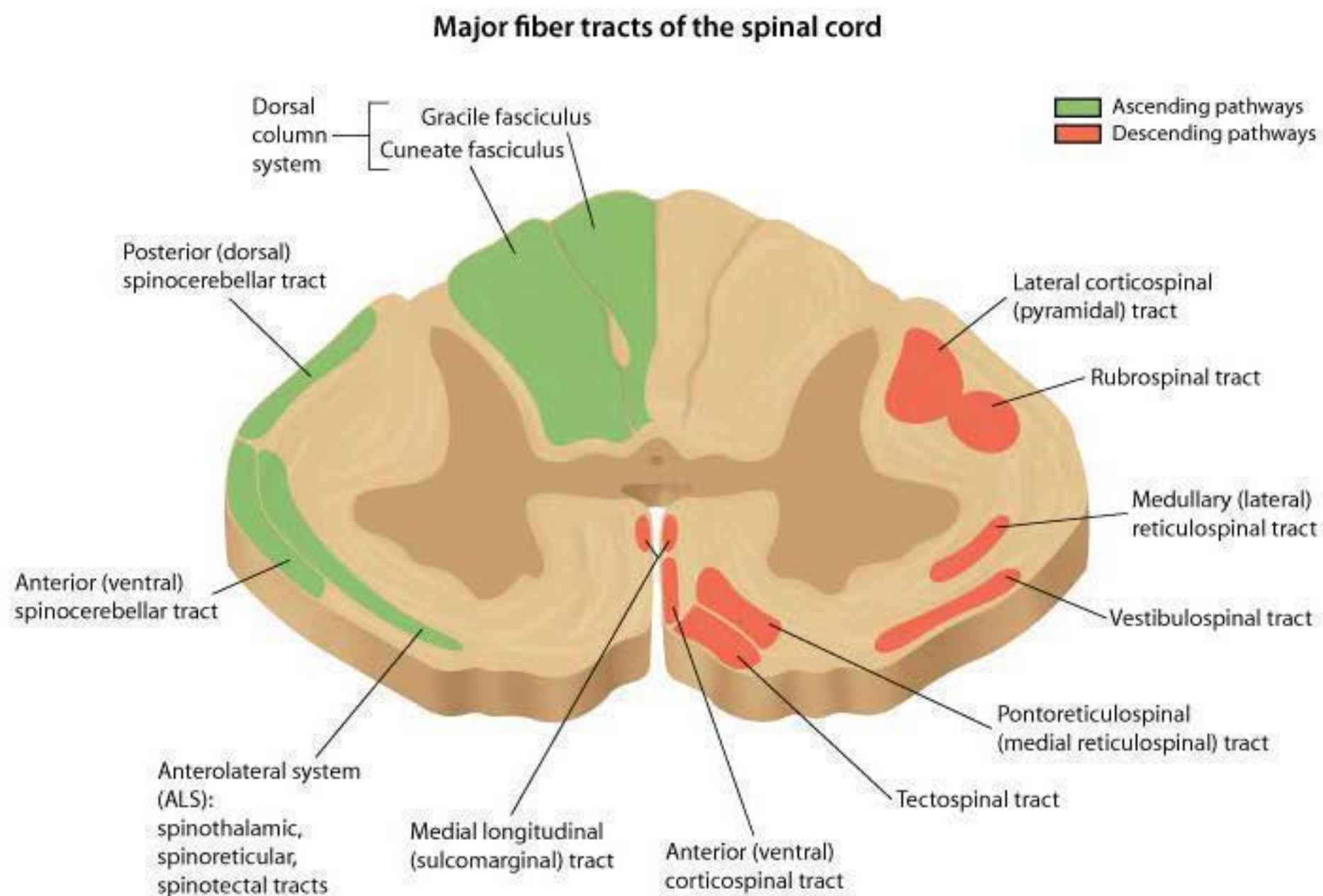
Anterior spinal cord infarction is a potential complication of thoracic aortic aneurysm surgery and typically presents with spinal shock (abrupt onset of bilateral flaccid paralysis and loss of pain/temperature sensation below the level of spinal injury). Upper motor neuron signs (spasticity and hyperreflexia) subsequently develop over days to weeks. Vibration and proprioception are usually preserved.

References:

1. [Endovascular thoracic aortic repair and risk of spinal cord ischemia: the role of previous or concomitant treatment for aortic aneurysm](#)
2. [Spinal cord syndromes.](#)

Media Exhibit

ord tracts



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