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CASE REPORT

Acute Paraplegia Due to Spinal Cord Infarction in a Case of Takayasu Arteritis and Aortic Dissection

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Abstract

Background: Spinal cord infarction is a rare but devastating cause of acute myelopathy, accounting for less than 1% of all strokes. It is most commonly associated with vascular pathologies, including aortic dissection and large-vessel vasculitis such as Takayasu arteritis. **Case Presentation:** We report a case of a 40-year-old female presenting with sudden-onset, painless paraplegia accompanied by sensory loss below the T4 level and autonomic dysfunction. Clinical examination revealed absent lower limb pulses and an abdominal bruit. Imaging studies demonstrated a Type B aortic dissection with extensive thoracic spinal cord infarction and features suggestive of Takayasu arteritis, including large-vessel wall thickening and stenosis. The patient was managed conservatively with careful blood pressure control, antiplatelets, corticosteroids, and supportive care including physiotherapy. A multidisciplinary approach was adopted to balance the competing priorities of aortic stabilization and spinal cord perfusion. **Conclusion:** This case highlights the importance of considering vascular etiologies in acute non-traumatic paraplegia. Early recognition and appropriate imaging are crucial for diagnosis. Management requires a nuanced approach to optimize neurological outcomes while preventing progression of aortic pathology.

Keywords: Air Pollution, Meteorological, Opencast Coal Mine, Particulate Matter

1. Introduction

Spinal cord infarction is a rare but serious cause of acute myelopathy, accounting for less than 1% of all strokes[1]. It typically presents with abrupt onset of motor weakness, sensory deficits, and autonomic dysfunction, often mimicking other neurological emergencies. The diagnosis can be challenging, particularly in the absence of trauma or compressive lesions, and requires a high index of suspicion supported by appropriate imaging. Vascular compromise remains the most common underlying mechanism, with etiologies ranging from atherosclerosis to acute aortic syndromes[1,2].

Among vascular causes, aortic pathology - particularly aortic dissection - is a well-recognized precipitant of spinal cord ischemia. Interruption of blood flow through segmental arteries supplying the spinal cord, especially the artery of Adamkiewicz, can result in anterior spinal artery syndrome, characterized by motor paralysis and loss of pain and temperature sensation[3,4]. Type B aortic dissection, involving the descending thoracic aorta, is usually managed conservatively with strict blood pressure control. However, in the presence of spinal cord ischemia, aggressive antihypertensive therapy may further reduce spinal perfusion, thereby complicating management decisions[5,6].

Takayasu arteritis is a chronic granulomatous vasculitis affecting large vessels, predominantly the aorta and its major branches, and is more commonly seen in young to middle-aged women[7,8]. The disease

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leads to arterial wall thickening, stenosis, occlusion, and occasionally aneurysm formation or dissection. Neurological manifestations are typically related to cerebral ischemia, but spinal cord involvement is rare. When Takayasu arteritis coexists with aortic dissection, the risk of ischemic complications increases due to combined effects of vascular inflammation and structural disruption[7,9].

In this context, we report a rare case of acute paraplegia resulting from spinal cord infarction in a patient with Type B aortic dissection in the background of Takayasu arteritis. This case highlights the importance of considering vascular etiologies in acute non-traumatic paraplegia and underscores the complexities involved in balancing hemodynamic management with preservation of spinal cord perfusion.

2. Case Presentation

A 40-year-old female presented with sudden-onset weakness of both lower limbs of one-day duration. The weakness was acute, painless, and associated with sensory loss below the chest and urinary retention. There was no history of trauma, fever, or preceding illness.

On examination, she was conscious with elevated blood pressure. Neurological evaluation revealed flaccid paraplegia (power 0/5) with a sensory level at T4 and absent lower limb reflexes. Upper limb examination was normal. Peripheral pulses in the lower limbs were feeble, and an abdominal bruit was noted.

MRI of the spine showed features consistent with extensive thoracic spinal cord infarction. CT angiography revealed a Type B aortic dissection involving the descending thoracic aorta, along with features suggestive of large-vessel vasculitis, consistent with Takayasu arteritis.

The patient was managed conservatively with controlled blood pressure reduction, antiplatelets, statins, and corticosteroids. Supportive care, including bladder management and physiotherapy, was provided. She remained neurologically stable during hospitalization and was discharged on follow-up and rehabilitation advice.

3. Discussion

Spinal cord infarction is a rare cause of acute myelopathy, most commonly resulting from vascular compromise[1,2]. It typically presents with sudden, painless neurological deficits, as observed in this case.

Aortic dissection is a recognized cause of spinal cord ischemia due to disruption of segmental arterial supply, including the artery of Adamkiewicz, leading to anterior spinal artery syndrome[6,9]. While Type B aortic dissection is usually managed conservatively, the presence of spinal cord ischemia poses a therapeutic challenge, as excessive blood pressure reduction may further impair spinal perfusion[5,6].

Takayasu arteritis, a chronic large-vessel vasculitis affecting the aorta and its branches, can lead to stenosis, occlusion, and, rarely, dissection[7,8]. The coexistence of Takayasu arteritis with aortic dissection, as seen in this patient, likely increases the risk of spinal cord infarction due to combined inflammatory and structural vascular compromise[6,7].

Clinical features such as abrupt onset, absence of trauma, diminished peripheral pulses, and vascular bruits should raise suspicion of a vascular etiology. Early imaging is essential for diagnosis. Management requires a multidisciplinary approach, balancing aortic stabilization with maintenance of spinal cord perfusion.

4. Conclusion

This case highlights a rare but clinically significant cause of acute paraplegia due to spinal cord infarction in the setting of Type B aortic dissection and underlying Takayasu arteritis. It emphasizes the importance of considering vascular etiologies in patients presenting with sudden, painless myelopathy, particularly when associated with signs of large-vessel involvement. Early recognition and prompt imaging are essential for accurate diagnosis. Management requires a carefully

balanced approach to maintain spinal cord perfusion while preventing progression of aortic pathology. A multidisciplinary strategy is crucial to optimize outcomes in such complex presentations.

5. Acknowledgements

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6. Ethical Approval

As this is a case report, formal ethical committee approval was not required. However, the study was conducted in accordance with institutional ethical standards and the principles of the Declaration of Helsinki.

7. References

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