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The Vertebral Squeeze - A Rare Case of Vertebral Artery Compression Syndrome

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Abstract: ***Background**: Vertebrobasilar dolichoectasia (VBD) is a rare cerebrovascular anomaly characterized by elongation, dilatation, and tortuosity of the vertebral and basilar arteries. This can result in mechanical compression of the brainstem, particularly the medulla, manifesting with various neurological symptoms. **Case Presentation**: We present a case of a 37 - year - old female who reported seizures and headache. MRI revealed acute angulation at the cervicomedullary junction with bilateral vertebral arteries compressing the ventral medulla. She was managed conservatively with antiepileptics and analgesics due to the non - emergent nature of symptoms. **Conclusion**: Vertebral artery compression syndrome, though rare, must be considered in patients presenting with atypical neurological complaints. MRI plays a crucial role in diagnosis, and treatment must be individualized.*

Keywords: Vertebral Artery, Dolichoectasia, Medulla Oblongata, MRI, Brainstem Compression

1. Introduction

Vertebrobasilar dolichoectasia (VBD) is a rare neurovascular condition affecting 1–2% of the population, often discovered incidentally during imaging. It is characterized by elongation and tortuosity of the vertebrobasilar arteries, which may lead to ischemic or compressive complications. While commonly asymptomatic, compression of brainstem structures—especially the medulla—is an under - recognized but potentially serious manifestation [1, 2]. The term **Vertebral Artery Compression Syndrome (VACS)** has been proposed to denote symptomatic cases where dolichoectatic arteries exert mechanical pressure on medullary or upper cervical cord structures [1].

2. Case Report

A 37 - year - old female presented with generalized seizures and persistent occipital headache. She denied any history of trauma, paresthesia, diplopia, dysarthria, or prior neurological deficits. Physical and neurological examinations were unremarkable.

Imaging Findings:
MRI brain with cervical spine was performed using a 3 Tesla unit. T2 - weighted sagittal images demonstrated acute angulation at the cervicomedullary junction. Axial T1 - FSPGR (BRAVO) sequences revealed bilateral vertebral arteries exerting pressure on the anterior medulla.
Incidental finding of mastoiditis is noted.

Management:
Given the non - progressive, non - emergent symptoms and absence of myelopathy, conservative treatment was chosen. The patient was started on antiepileptics and analgesics, with planned follow - up. Surgical decompression (microvascular decompression) was considered as a secondary option if symptoms progressed [4].

3. Discussion

Though rarely symptomatic, VBD can lead to a variety of symptoms depending on the location and severity of compression. In our case, direct anterior medullary compression was evident on MRI, correlating with seizures and headache. Medullary involvement may present with nonspecific signs like dizziness, neck pain, or even autonomic dysfunction [2, 5].

Differential diagnosis includes medullary infarction, demyelinating lesions, tumors, or Chiari malformation, which were ruled out based on imaging and clinical correlation.

MRI and MRA are essential tools in diagnosis. Recognition of this entity is critical as treatment approaches vary based on symptom severity—from conservative medical therapy to surgical microvascular decompression [3, 4]. Literature reports variable outcomes with surgery, highlighting the need for tailored, patient - specific decisions.

4. Conclusion

Vertebral artery compression of the medulla, though infrequent, should be considered in patients with unexplained cranial or spinal symptoms. MRI is indispensable for diagnosis. While surgery remains the definitive treatment, conservative management may suffice in non - emergent cases. Greater awareness and further studies are needed to define optimal management strategies.

5. Image Gallery

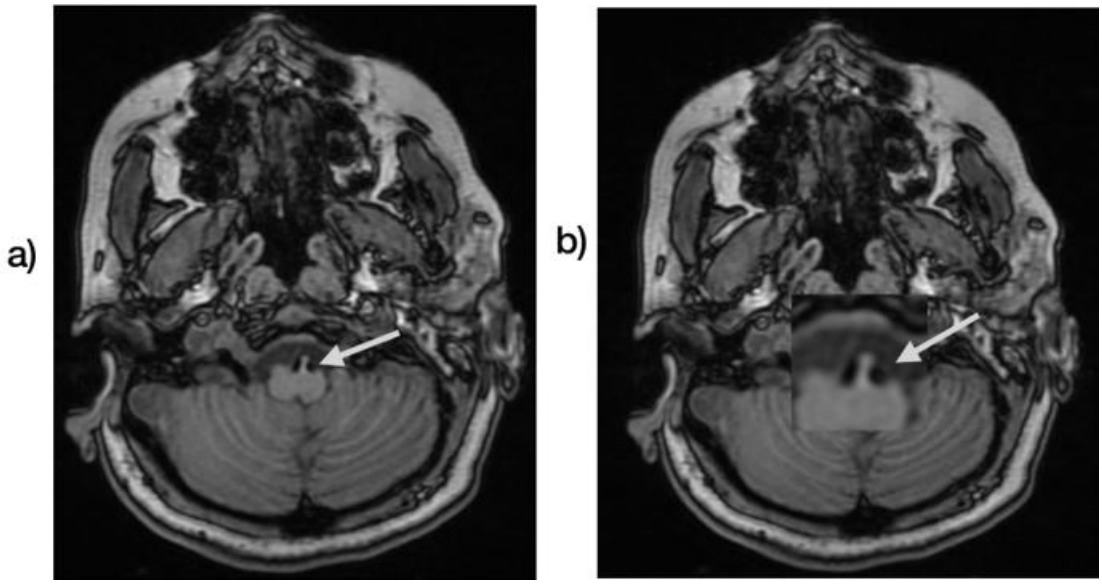

Figure 1: (a, b) Axial: T1W images showing compression of ventral medulla oblongata by bilateral vertebral artery medullary compression syndrome (VAMCS)

Figure 2: Sagittal T2W images showing Mild Acute Angulation of Cervico medullary Junction, with vertebral artery causing indentation over the medulla.

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