

# Vertebral Artery Dissection and Lateral Medullary Stroke Associated with Neck Trauma and Clonidine Withdrawal

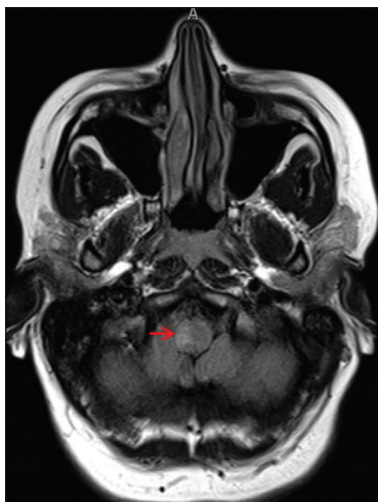
Dear Editor,

Causes of stroke tend to differ between younger and older populations. In young adults, the most common causes of stroke are arterial dissection and cardiogenic embolism.<sup>[1]</sup> In the setting of neck trauma preceding a stroke, vertebral artery dissection should be strongly considered as an etiology. We present a case of a young woman who developed a stroke in the setting of extremely elevated blood pressure. Though the stroke was initially thought to be secondary to a hypertensive emergency, further investigation suggested another primary cause, with blood pressure playing a contributing role.

A 22-year-old woman presented to the emergency department of a community hospital with difficulty walking, which began after she hurt her neck during sexual intercourse the night before. Past medical history was significant for hypertension diagnosed at age 17, obesity (body mass index 33 kg/m<sup>2</sup>), gestational diabetes that developed during her second pregnancy, subsequent

type 2 diabetes mellitus, and depression. Her medications included clonidine, glyburide, and fluoxetine. The patient reported that she had stopped taking both clonidine and glyburide 2 weeks before presentation because she could not afford medication refills. The patient's blood pressure on arrival was 207/131 mmHg and did not respond to an intravenous dose of labetalol. She was transferred to the medical intensive care unit for management of blood pressure, which had risen to 243/140 mmHg. Initial physical examination was benign and the patient was placed on intravenous labetalol and nicardipine drips to control blood pressure overnight. The next morning, the patient noticed a sensation of heat in her left arm and leg and that only the left half of her face was sweating. A detailed neurological examination revealed decreased sensation to pin-prick and temperature in the left upper and lower extremities, with diaphoresis on the left side of her face. Cerebellar testing was negative for intention tremor and dysdiadokinesia. Romberg testing was also negative, but gait testing revealed some ataxia and a tendency to lean toward the right side. A computed tomography (CT) scan of the head was negative for intracranial hemorrhage; however, a magnetic resonance imaging (MRI) scan of the brain revealed a right-sided lateral medullary stroke [Figure 1]. Additionally, a magnetic resonance angiogram (MRA) of the head and neck revealed a right vertebral artery dissection extending intracranially [Figure 2]. The patient's blood pressure was slowly lowered over one week with hydrochlorothiazide, amlodipine, and labetalol. Aspirin was started for the dissection.

Several potential causes of hypertension in this young patient were ruled out, including fibromuscular



**Figure 1:** Magnetic resonance imaging of the brain revealing a right-sided lateral medullary stroke (marked by the arrow)



**Figure 2:** Brain magnetic resonance angiogram of the posterior cerebral circulation showing a filling defect in the right vertebral artery consistent with dissection (marked by the arrow)

dysplasia, pheochromocytoma, hypercortisolism, and hyperaldosteronism. Clonidine withdrawal has been associated with severe rebound hypertension<sup>[2]</sup> and abrupt discontinuation of clonidine 2 weeks prior to presentation may have contributed to the patient's elevated blood pressure. Additionally, blood pressure tends to rise following an acute stroke,<sup>[3]</sup> with the medulla being central in regulating the cardiovascular response to stress.<sup>[4]</sup> However, uncontrolled hypertension before symptom onset may also have played a role in stroke development. Hypertension has been reported as a risk factor for spontaneous vertebral artery dissection leading to stroke, although it is unclear whether the mechanism is related to acute elevations in blood pressure.<sup>[5]</sup>

Vertebral artery dissections commonly occur with blunt trauma to the neck, but can also occur as a result of minor trauma associated with neck hyperextension, neck hyperflexion, and head turning.<sup>[6]</sup> The resulting intimal flap reduces blood flow through the artery, leading to thrombus formation and subsequent embolization to the brain stem and cerebellum.<sup>[7]</sup> The patient presented here may have developed a vertebral artery dissection through one of the preceding mechanisms during sexual intercourse.

Vertebral artery dissections have been linked to development of lateral medullary strokes, also known as Wallenberg syndrome.<sup>[8]</sup> The patient's difficulty walking was likely the first symptom of her stroke, though sensory symptoms did not appear until the next morning. Ataxia indicates damage to the inferior cerebellar peduncle, while loss of contralateral pain and temperature sensation is consistent with damage to the spinothalamic tract. Sweating on the left side of the patient's face likely represents a contralateral hyperhidrosis which has been reported to occur in medullary strokes, possibly due to a disruption in an inhibitory pathway that controls sweating on the contralateral face and body.<sup>[9]</sup> The absence of ipsilateral loss of pain and temperature on the face indicates sparing of the spinal trigeminal nucleus and tract.

Lateral medullary strokes may result from vertebral artery dissections. This is an important diagnosis to consider in young adults presenting with new-onset neurological symptoms and can be detected by MRI of the brain. Antiplatelet or anticoagulation therapy

should be started promptly to prevent thrombus progression. The etiology of hypertension in this setting may be multifactorial. In the presence of a stroke, blood pressure should be lowered carefully so as to decrease its deleterious effects while maintaining adequate cerebral perfusion.

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