

Is Artery Web Seen in Vertebral Artery?

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Carotid artery web has been frequently reported. However, the vertebral artery web has been less reported. It is difficult and seldom to diagnose vertebral artery web with noninvasive examinations. Here, we present a case of asymptomatic vertebral artery web diagnosed by ultrasound and confirmed by digital subtraction angiography.

Key Words: Vertebral artery web—asymptomatic—stroke—ultrasound

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Case Report

A 50-year-old woman presented with transient recurring episodes of right-sided hemiparesis for 3 weeks. The patient's medical history was unremarkable. General and neurological examination showed nothing unusual. There was no evidence of dysarthria, cortical, or any cerebellar signs. Laboratory tests including full blood count, urea and electrolytes, and coagulation were all normal. Electrocardiogram was unremarkable. Magnetic resonance imaging of the head did not reveal any acute ischemic changes and MRA of the head was normal. Color Doppler ultrasound revealed a turbulent flow in the right vertebral artery ostium, B-mode ultrasound and contrast-enhanced ultrasound demonstrated a thin, membrane-like filling deficit. CT angiography (CTA) of neck demonstrated mild stenosis of the right vertebral artery but axial CTA did not show the lesion clear. Finally, digital subtraction angiography (DSA) was performed and showed the presence of a vertebral

artery web (Fig 1). Besides, the left striatum artery was not evident either. The patient was diagnosed of anterior circulation transient ischemic attacks and asymptomatic vertebral artery web. She was given aspirin 100 mg once daily, clopidogrel 75 mg once daily, and atorvastatin 20 mg once daily. With medical treatment, the patient's symptoms did not happen again.

Discussion

The case described a patient with anterior circulation transient ischemic attacks, and occasionally, we identified the presence of vertebral artery web. Vertebral artery web is rarely reported and represent an intimal variant of fibromuscular dysplasia.¹ The artery web could cause a turbulent flow and lead to posterior circulation thromboembolisms. The posterior circulation symptoms often include motor and sensory deficits, "crossed" syndromes, homonymous hemianopia, ataxia, vertigo, and dysphagia or dysarthria.² In this case, the patient's symptoms were considered due to anterior circulation transient ischemic attacks other than any association with the vertebral artery web. In the existing literature, there were only 3 articles and 7 patients reported.^{1,3,4} Among those patients, 4 patients were male and 5 patients were symptomatic. Based on the pathophysiology, vertebral artery web should be considered as a possible cause in the young stroke of posterior circulation.¹

Prompt diagnosis of vertebral artery web is important since it impacts treatment and prognosis. However, the appearance of noninvasive or less invasive examinations

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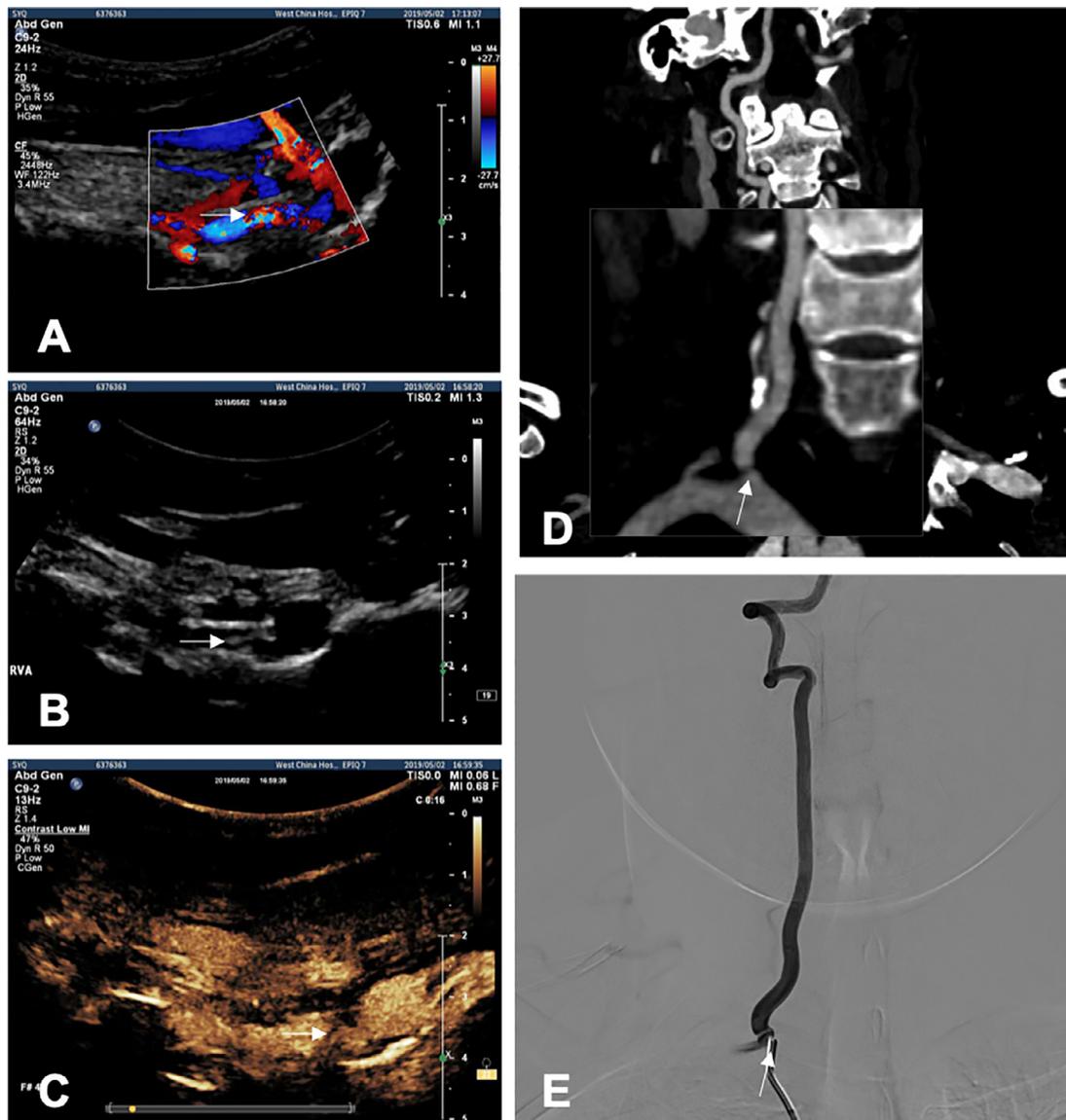


Figure 1. A turbulent flow (A), B-model ultrasonic (B), contrast-enhanced ultrasound (C), CT angiography (D), and digital subtraction angiography (E) showing the vertebral artery web.

has not been described.^{1,3,4} Our case describes the ultrasound's appearance of vertebral artery web for the first time. Even it is asymptomatic, the turbulent flow on color Doppler ultrasound implies a potential etiology. Because of the deep location of vertebral artery's ostium, it is helpful to use different probes and contrast-enhanced ultrasound to show the lesion. DSA is a gold standard imaging method for diagnosis, the vertebral artery web is characteristically located in V1 segment and V3 segment,^{1,3,4} and differential diagnosis on DSA includes dissection and kink.⁵

The treatment of vertebral artery web depends on whether the vertebral artery web is symptomatic.¹ There is no consensus on management of an asymptomatic web. However, stenting seems to be a therapeutic option for a symptomatic web.

Conclusions

Vertebral artery web is less reported; however, the artery web could cause a turbulent flow and lead to posterior circulation thromboembolisms. Therefore, it is essential that ultrasound doctors and neuroradiologists are well aware of the imaging appearance for prompt diagnosis and treatment.

Conflict of interest

None.

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