

CASE REPORT

Bilateral vertebral artery stenosis present with vertigo

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SUMMARY

Of ischaemic stroke patients, about 25% rise from the posterior or vertebrobasilar system. The ischaemia of vertebral arteries may emerge for different vascular pathological reasons, at different localisations and with different clinical findings. Despite its low morbidity and mortality risk, early diagnosis and treatment is of importance. Vertebrobasilar ischaemia symptoms can be observed clinically such as vertigo, tinnitus, double vision, headache, hypokinesia and hearing disorders, etc. In this article, a 42-year-old stroke patient case is presented, who applied to the emergency service with vertigo and then, was diagnosed with bilateral vertebral artery stenosis by means of cranial MR angiography.

BACKGROUND

Vertebral arteries appear immediately before the thyrocervical trunk on both sides of the neck as two branches of both subclavian arteries; they combine to form the basilar artery on the skull base upon extending through a neural cavity between cervical 1 and 7 vertebrae.¹ Posterior or vertebrobasilar system occlusions are responsible for one-fourth of ischaemic stroke. Atherosclerosis of vertebral arteries is the main cause of posterior circulation infarcts. Vertebrobasilar ischaemia may occur in combination with symptoms such as vertigo, tinnitus, double vision, headache, drowsiness and hearing disorders.² Vertebral artery stenosis is one of the recoverable causes of strokes in the posterior system. Although

the risk of morbidity and mortality is low, early diagnosis and treatment is important.³ In recent years, the number of diagnosed and treated patients has been increasing in accordance with advancements in medical-imaging methods. In this study, the case of a man with vertigo and young stroke is presented, who was diagnosed with bilateral vertebral artery stenosis.

CASE PRESENTATION

A 42-year-old hypertensive man consulted emergency service with headache and vertigo complaints. When he was admitted, his neurological examination was normal, except for left-beating nystagmus with horizontally rotating quick phase and minimal central facial palsy on the right side. He was admitted to hospital as an inpatient upon seeing hypodense area concordant with infarct in distinct bilateral cerebellar on the right and in thalamus on the left side (figure 1A,B) in CT scan. Heparin with low molecular weight and 300 mg/day acetylsalicylic acid two times a day was given to the patient during the period of hospitalisation. Ramipril 10 mg/day was included in the treatment with reasons of high arterial tension. On the second day of hospitalisation, right central facial palsy, slight dysarthria, left distinct dysmetria, left dysidiadochokinesia and left truncal ataxia were present in examination of the patient with advanced neurological findings. Pervasive, diffusive infarct areas were seen on cranial MRI bilateral

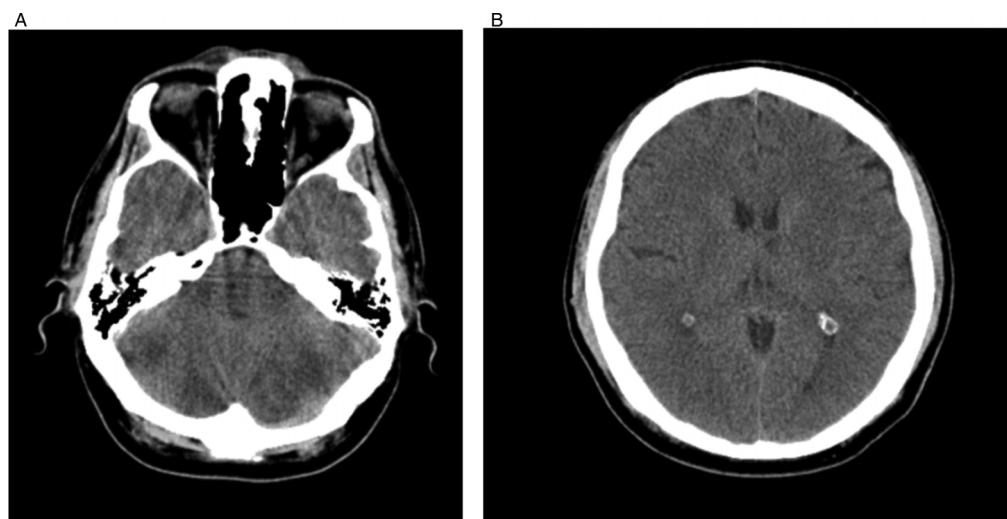


Figure 1 (A and B) Hypodense area concordant with infarct in bilateral cerebellar area distinct on the left side (A) and in thalamus on the left side in CT scan.

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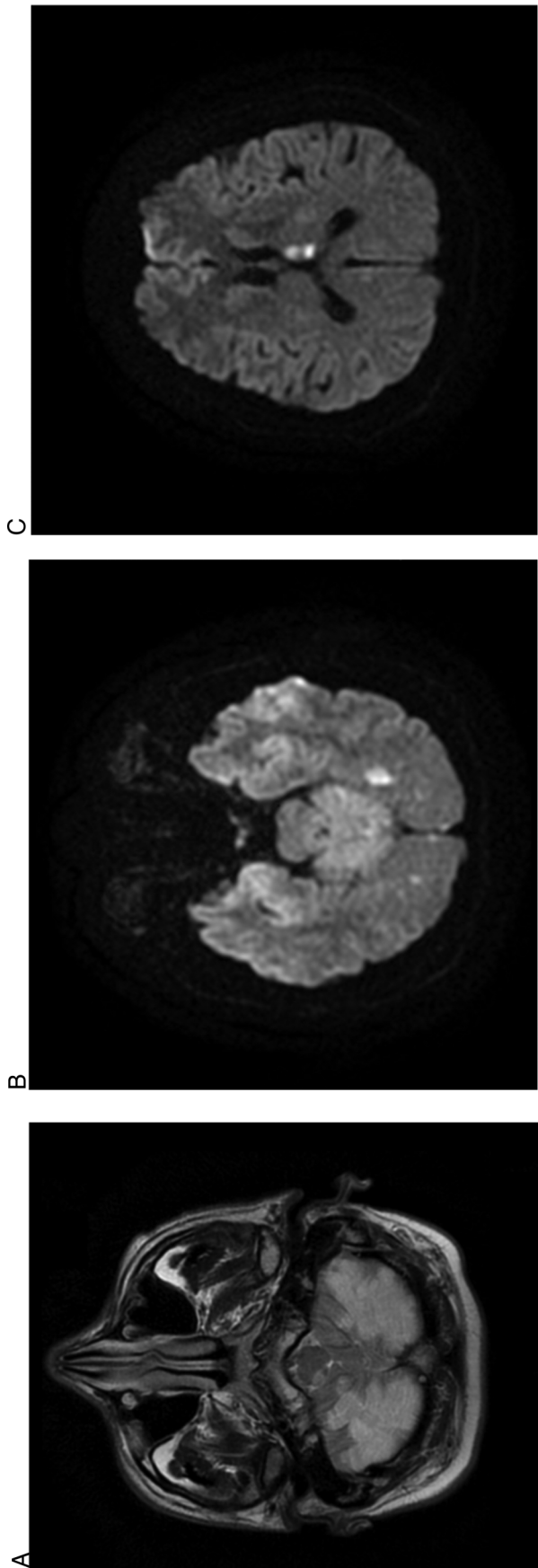


Figure 2 (A–C) Diffuse infarct areas in bilateral cerebellar hemispheres and right mesencephalon (A), left occipital (B), left thalamic area (C) in cranial MRI.

cerebellar hemisphere, left occipital, right mesencephalon and left thalamic area (figure 2A–C). Diffusion restriction was seen in these areas in diffusion MRI (figure 3A,B). It was impossible to see right vertebral flow in Doppler ultrasonography (USG) examination of carotid vertebral arteries and 70% stenosis was detected in left vertebral artery. As a result, in the intended carotid vertebral MR angiography, distal occlusion was observed in right vertebral artery's intermediate and distal sections and artery distal of left vertebral (figure 4A,B). Balloon angioplasty was applied to the patient diagnosed with bilateral vertebral artery stenosis.

DISCUSSION

Vertebral artery roots from proximal subclavian. Vertebral artery reaches up to cervical vertebra after going through transverse foramens of the fifth and sixth vertebral after leaving the subclavian artery. The segment out of foramen 'V1', cervical segment within transverse foramens 'V2', segment up to the point where it enters subarachnoid space after going through dura mater 'V3' form 'V4' segment after it enters into the subarachnoid space, and forms the basilar artery by combining with 'V4' in the frontal part of the bulb upon heading towards frontal-upper axis.⁴ Ischaemia of vertebral arteries may occur due to different vascular pathological causes, in different locations and upon different clinical findings. Vertebral artery stenosis is accompanied with a wide range of posterior system findings from a simple vertigo to occipital cortex dysfunction (vertigo, loss of balance, ataxia, tinnitus and drop attacks).⁵ When our patient was admitted to the hospital, there was only one symptom which was vertigo, and 2 days later, ataxia and other cerebellar findings were involved. In the images of emergency tomography, he was monitored closely and anticoagulant treatment was initiated due to the presence of suspected infarct.

As the vertebral artery system has a structure that may be considered complex, the evaluation of stenosis with ultrasonography (USG) with colour Doppler may be difficult. It is known that a good image quality, high level of technical knowledge and experience are all required in stenosis evaluation with ultrasonography with colour Doppler.⁶ Vertebral MR angiography has been introduced as a routine practice in recent years and as a supplementary method for detailed insights of vascular pathology.⁷ In our case, it was impossible to see right vertebral flow with USG with colour Doppler and flow rate of left vertebral decreased remarkably. Vertebral artery angiography revealed that intermediate and distal sections of right and left vertebral distal were occluded. In our case, USG with colour Doppler and vertebral artery MR angiography suggested the same vascular pathology.

Antithrombotic and anticoagulant medicines were used in order to reduce risk of stroke in vertebral artery stenosis.^{8 9} In our patient, anticoagulant treatment was initiated starting from the early stages. Interventional treatment was considered, since the clinical findings were progressive despite the treatment. Surgical treatment is avoided in vertebral artery stenosis due to frequent occurrence of complications such as Horner syndrome (15–28%), lymphocele (4%), recurrent laryngeal nerve injury (2%).¹⁰ In cases where symptoms are persistent following a suitable medical treatment, there is an indication for treatment with balloon angioplasty and stenting.¹¹ However, there is no other study to compare the success rates of two methods.¹² Our case was admitted to the neuroradiology department with consideration that endovascular intervention would be suitable and a balloon angioplasty was applied.

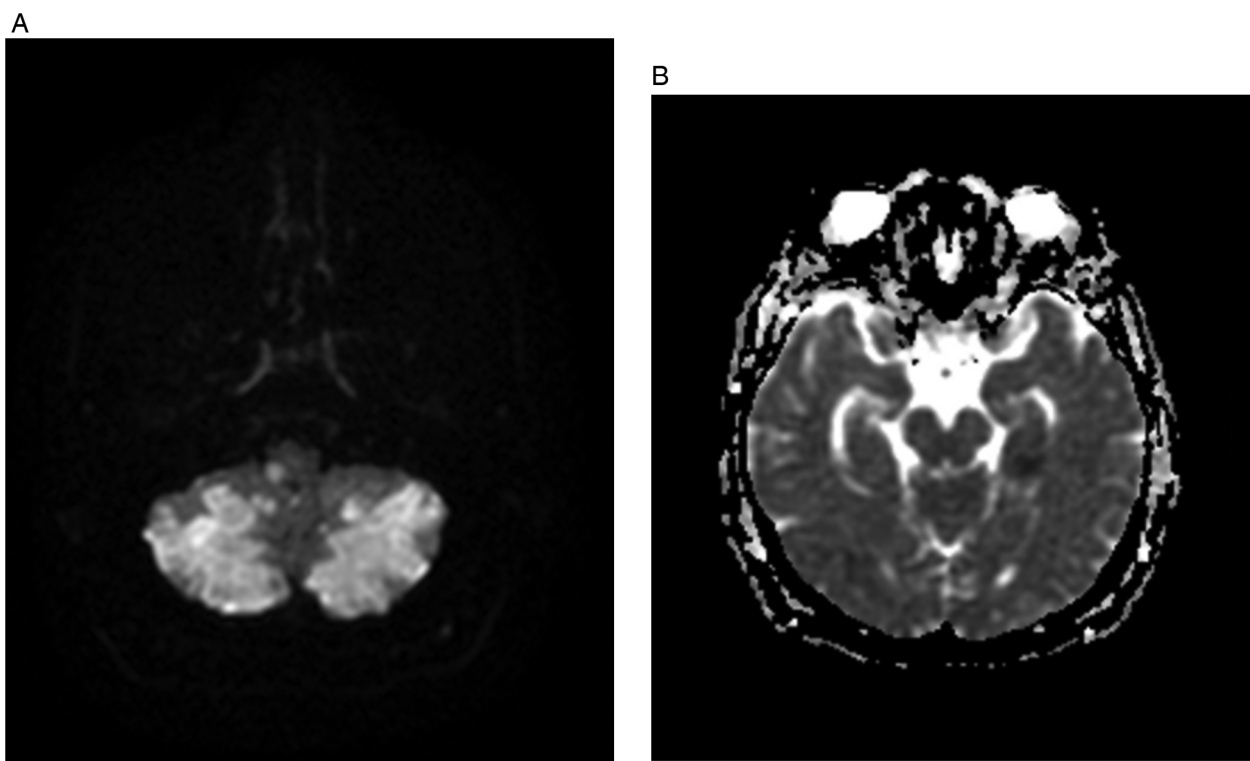


Figure 3 (A and B) Diffusion MRI findings concordant with acute phase infarct in B1000 (A), and apparent diffusion coefficient map.

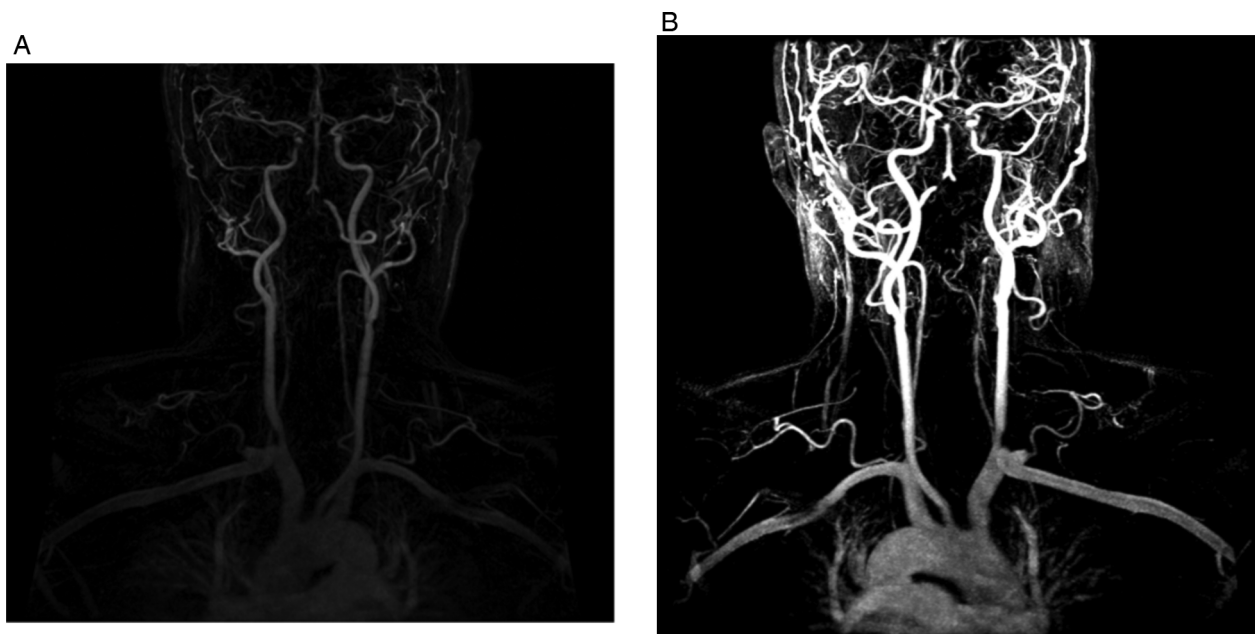


Figure 4 (A and B) Occlusion in right vertebral artery's intermediate and distal sections and artery distal of left vertebral in MR angiography.

Learning point

As a result, vertebral artery pathologies should be taken into consideration in individuals with central system-related vertigo regardless of the presence of vascular risk factors.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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