

CASE REPORT

Tinnitus caused by vertebrobasilar dolichoectasiaTitlic M¹, Tonkic A², Jukic I², Buca A³, Kolic K³, Batinic T³*Department of Neurology, University Hospital Split, Split, Croatia. marina.titlic@inet.hr***Abstract**

A 73-year old man presented with the tinnitus in the left ear for 11 months. Computer tomography (CT) showed an enlarged dolichoectasia of the left vertebral artery. Magnetic resonance imaging (MRI) of the brain shows dolichoectasia of the left vertebral artery and the initial part of the basilar artery. Multi-slices computer tomographic (MSCT) angiography showed an enlarged vertebrobasilar dolichoectasia of the left vertebral artery, which compressed the vestibulocochlear nerve. This study supports a vascular compression of cranial vestibulocochlear nerve and the brainstem as a cause of tinnitus, and demonstrates a MSCT angiography value as an excellent, non-invasive technique to demonstrate the compression (Fig. 1, Ref. 20). Full Text (Free, PDF) www.bmj.sk.

Key words: tinnitus, vertebrobasilar artery, dolichoectasia, MSCT angiography.

Tinnitus is an important complaint or disease or a combination, especially in our aging population. Neurootologists clinically deal with many different disorders of the human cranial senses, of which tinnitus is a very frequent type. The mechanism underlying tinnitus is still not completely understood, but advances in the neuroimaging and brain stimulation have provided us with new insights. Evidence suggests that tinnitus actually might be generated by the central rather than peripheral structures (1, 2). Patients presenting with tinnitus have to be evaluated by a comprehensive examination, including ENT status, audiometry and a complete neuro-otological evaluation if required, to exclude an organic cause of tinnitus, such as an external – or middle ear lesion, or a retro-cochlear process (3). Tinnitus is an uncommon otological symptom. Objective tinnitus has numerous causes, including a benign intracranial hypertension, glomus tumours and atherosclerotic carotid artery disease, vascular anomalies, dural arteriovenous fistula of the transverse or sigmoid sinus (4, 5, 6). Irritation of the vestibulocochlear nerve may cause vertigo or tinnitus accordingly. The radiological evaluation is essential in all patients with tinnitus. Although the conventional intraarterial digital subtraction angiography remains the gold standard method for the vertebral artery imaging, non-invasive modalities such as ultrasound, multi-slice computed tomographic angiography and magnetic resonance angiography are constantly improving and are playing an increasingly important role in the diagnosing a vertebral artery pathology in clinical practice (7, 8, 9).

We are presenting a tinnitus caused by vertebrobasilar dolichoectasia proved by Multi-slices computer tomographic (MSCT) angiography.

Case report

A 73-year old man experienced tinnitus in left side of the head and in the left ear during last eleven months, gradually increasing. Tinnitus was more intensive when lying down. It was present constantly, with occasional oscillations in intensity. Occasionally, stronger vertigos with nausea appeared. The patient has also been treated for a moderate hypertension, but suffered from no other diseases. The brainstem-evoked response was tested at the right side at 85 dB and at the left side at 95 dB. At the right side, the III and IC wave latency was marginal, with somewhat lower amplitudes. At the left side, the III wave was extended with a lowered amplitude-evoked response. Neurological finds were normal. Transcranial doppler sonography (TCD) of cranial blood vessels was normal. Computed tomography (CT)

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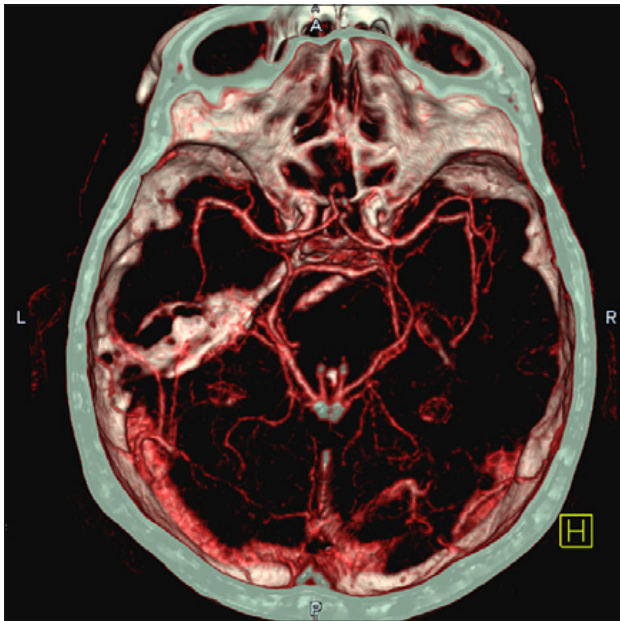


Fig. 1. MSCT angiography of the brain blood vessels – vertebral dolichoectasia at left, normal finds at right.

of brain was carried out with Simens EMOTION 2000. The findings indicated a widening of the left vertebral artery. Magnetic resonance imaging (MRI) of brain was carried out with Shimatzu EPIOS5 0.5T, to confirm a left vertebral dolichoectasia with compression of the left vestibulocochlear nerve and brainstem. Multi-slice computed (MSCT) angiography of the brain artery was carried out with 7 MSCT Somatom Sensation 16 – Simens 2005. It showed a slight dolichoectasia and tortuosity of the left vertebral artery which squeezed in the pons and beginning of the medulla oblongata on the left side. It continued to the basilar artery dolichoectasia placed very near of the left vestibulocochlear nerve (Fig. 1).

We treated this nausea-accompanied tinnitus with betahistine 48mg/day and ticlopidine 500 mg/day, which substantially reduced the symptoms.

Discussion

About six percent of the general population has what they consider to be “severe” tinnitus. Tinnitus may be in both ears or just in one ear (10, 11). The tinnitus plays an important role among the numerous subtypes of tinnitus. The tinnitus etiology includes: atherosclerosis, AV malformation or fistula, glomus tumors, high flow states, vascular loop, aberrant carotid artery, dehiscient jugular bulb, sigmoid sinus thrombosis, pseudotumor cerebri, palatal myoclonus, middle ear myoclonus (5, 12–15).

Early diagnosis and appropriate intervention may save patients from an unnecessary morbidity. Radiographic evaluation is essential in all patients with tinnitus. Many patients have a treatable underlying condition. CT of the brain showed a suspected vascular change of the vertebral flow, therefore we

further applied a more sensitive, diagnostic treatment. In diagnostic treatment, priority is always given to non-invasive methods. Non-invasive, MSCT angiography has a great potential in evaluation of vascular structures such as arteriovenous malformation of the brain (16–18). Dolichoectasia is a rare atherosclerotic change of the vertebral blood vessels caused by neurovascular contact due to the enlarged lumen and tortuosity (19, 20). The neurovascular contact of the vertebral dolichoectasia and the vestibulocochlear nerve in the given case has manifested as tinnitus. So far, no case of tinnitus caused by vertebral dolichoectasia has been described, however, ipsilateral tinnitus and vertebral dolichoectasia explain the symptoms existing with normal neurootological findings. In conclusion, the tinnitus requires the application of a non-invasive MSCT angiography of the brain artery. Neurovascular contact is the most common cause of tinnitus, and vertebral dolichoectasia is a very rare form. Ipsilateral tinnitus and dolichoectasia indicate the existence of a direct neurovascular contact, clearly shown by the MSCT angiography.

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