

Case Report

Vertebral Artery Dissection – A Common Unrecognised Cause of Stroke in the Young

Ramesh Madhavan^{1,2}, Suhail Al Shammri^{1,2}, Geeti Chadha¹

¹Neurology Unit, Department of Medicine, Mubarak Al Kabeer Hospital, Kuwait

²Department of Medicine, Faculty of Medicine, Kuwait University, Kuwait

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INTRODUCTION

Vertebral artery dissection is currently recognized as a common cause of vertebro-basilar stroke in the younger population^[1,2,3]. Extracranial vertebral artery dissection occurs after mundane acts like turning the head while driving, swimming and painting. There are reports of such cases even after chiropractic manipulations^[4]. Early diagnosis and treatment will reduce the morbidity and mortality associated with this condition. In this report, a review of the etiologies, symptoms and signs, investigations, treatment and prognosis of the disease.

CASE REPORT

A 33-year-old Kuwaiti female was hospitalized with acute onset of severe nuchal and right temporal pain of seven days duration. The pain radiated to the shoulder and was stabbing in character. Initially, the pain was constant but later became intermittent. These symptoms were associated with vomiting and vertigo. The complaints appeared a few hours after she had a hairdo in a beauty salon, during which her neck was supported in a hyperextended position for about an hour. Manipulations of the neck were done with acts that included abrupt passive turning of the head. She suffered from these symptoms for the next three days, despite attending GP clinics, casualties of general hospitals and ENT outpatient clinics. The condition was thought to be benign and she was being treated for vomiting and vertigo symptomatically. She deteriorated to develop numbness and pain in her left upper limb and presented to the Neurology clinic.

Physical examination revealed a conscious, alert, fluent, right-handed female. The cranial nerves examination was normal. Ophthalmoscopy revealed normal disc margins. Nystagmus was not demonstrable. The musculo-skeletal system was normal except for an extensor plantar response on the left side. She also had hypoalgesia and

hypoesthesia in the left upper limb, which later progressed to involve the left lower limb and face. She had difficulty in performing the tandem gait. No other cerebellar signs were found.

Complete blood count and erythrocyte sedimentation rate were normal. Coagulation profile, platelet counts, and protein C and S levels were in the normal range. A screening for vasculitis that included ANA, CRP, Anti-phospholipid and Anti-cardiolipin antibodies was negative. Urine examination excluded Homocystinuria. CT brain was normal, but an MRI brain done a day later showed an area of infarct in the right cerebellum, probably due to embolization (Fig. 1). Vertebral angiography revealed occlusion of the right vertebral artery extracranially (Fig. 2). She was anticoagulated for six months and recovered well except for a mild residual sensory deficit.

Follow up MRA and MRI studies after six months showed persistence of the right vertebral artery occlusion.

DISCUSSION

Vertebral artery dissection (VAD) is not a well-recognized cause of stroke though a recent report^[5] showed it as a cause of cerebellar infarcts in about 67% of patients in the age group below 40 years. A majority in this group had intracranial vertebral dissection, though rarely was the dissection extracranial. Vascular insufficiency occurs because of the development of intraluminal thrombi that lead to intra-arterial emboli or occlusion at the origin of the posterior inferior cerebellar artery^[5]. Patients with a benign course are often undiagnosed, but in one series, 53% were found to have permanent neurological deficits^[3]. In yet another study, where 37 young patients with cerebellar infarctions due to various causes, including VADs, were analyzed, 53% recovered totally and 40% had mild sequelae^[5]. The reported cases of traumatic dissection of extracranial vertebral artery are mostly due to chiropractic manipulation. The other causes are

Address correspondence to:

Dr. Ramesh Madhavan, Dept. of Medicine (Neurology), Mubarak Al-Kabeer Hospital, P.O. Box: 43787, Hawalli, Kuwait. Tel: (965) 531 2700

trauma related to falls, sport and automobile accidents. Spontaneous dissections were due to simple acts such as turning the head while driving or painting the ceiling. It also occurs secondary to hypertension, migraine, syphilis, Marfan's syndrome, vasculitis, and fibro muscular dysplasia. The age group affected is usually between 30 and 50 years, with a female preponderance^[1,2,4].

Retrospective analysis of 4500 cervico-cranial arteriograms over a seven year period revealed 11 patients to have VADs of which four were traumatic and the rest spontaneous^[7]. In these patients, the clinical syndromes occur from the involvement of the lateral medulla or the cerebellum. The brainstem was affected bilaterally in the majority of cases. The common presenting symptoms were headache, dizziness, and paresthesias, as in our patient. The other neurological symptoms, though less common, included diplopia, dysphagia, dysphonia and paresis. Wallenbergs Syndrome, due to involvement of the posterior inferior cerebellar artery, were found in most patients of VADs^[5,6]. Substantial improvement of symptoms can occur in these patients, probably due to their young age and lack of atherosclerosis. Approximately 21% of the traumatic and 14% of the spontaneous dissection had a fatal outcome^[2].

Separation of extra-cranial and intra-cranial VADs is supported by differences in pathology, risk factors, clinical presentation and management. The plane of dissection in extra-cranial dissection is usually within the media and thus causes infarction, whereas in intra-cranial dissection, the hematoma is subintimal and may extend through the adventitia producing either an infarct or a subarachnoid bleed. No cases of asymptomatic intra-cranial VADs have been reported^[6].

Diagnosis is confirmed by vertebral angiography. The findings include long irregular luminal stenosis, total occlusion of the lumen, double lumen and pseudo-aneurysm of the vertebral artery^[2]. Frequently, the dissection extends circumferentially around the lumen, giving rise to the characteristic "string sign". Tapering or abrupt occlusion is the least specific angiographic sign. MRA discloses complementary information and, if it shows a double lumen or a mural hematoma, invasive angiography can be omitted^[3,5,6].

The initial treatment is IV heparin followed by oral warfarin for a period of three months. If spontaneous recanalization occurs and the arterial lumen appears smooth, the anticoagulation is discontinued. If the artery is still occluded, anticoagulants or anti-platelet agents are continued for a period of two years. If transient ischemic



Fig. 1: MRI Brain T2 weighted image showing hyperintense area, in the right cerebellum suggestive of infarction.



Fig. 2: Right vertebral angiography showing the 'string sign' suggestive of vertebral artery occlusion extra-cranially.

symptoms are recurrent, balloon occlusion, surgical ligation or repair of the origin of the vertebral artery is indicated.^[1,2,7]

This case report highlights vertebral artery dissection as an often-misdiagnosed cause of stroke in a young patient presenting with common symptoms like headache and vertigo. Early suspicion and treatment by casualty doctors, ENT surgeons and internists can prevent catastrophic events known to occur in VADs. The report also creates an awareness among physicians that carotid and vertebral dissections are not uncommon as a result of chiropractic and other maneuvers of the neck.

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