

Acquired Subclavian Steal syndrome; a rare cause for Paroxysmal vertigo and syncope.

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Introduction

Subclavian steal syndrome is an uncommon cause of vertigo, even though the vertigo is the typical presentation of this syndrome. This is a vaso-occlusive disorder involving the subclavian artery. The symptoms are usually provoked by exertion of the respective upper limb. Typical symptoms includes arm claudication and symptoms of posterior circulation ischemia such as vertigo, ataxia, and tinnitus. Common causes are arteriosclerosis, giant cell arteritis and Takayasu's arteritis.

Here we describe an uncommon cause of subclavian artery occlusion.

Case report

A 65 year old male presented with a history of paroxysmal vertigo and dizziness of 2 years duration. His vertiginous symptoms were brought on by performing certain activities with the right hand such as sweeping and ironing and was relieved by cessation of such activities. He also admitted that he had been feeling a sensation of numbness and tingling of his right fingers while plucking flowers. Furthermore, he had experienced 2 episodes of syncope on strenuous exercise involving his right hand.

On questioning, his symptoms were not associated with positional changes or suggestive of a cardiac aetiology. He had had a vascular repair done 5 years back for a right subclavian artery aneurysm which had occurred as a result of a road traffic accident.

Examination revealed a significant inter arm blood pressure difference [Right 110/70, left 160/110] and right

subclavian bruit. Rest of the neurological examination was unremarkable. He had undergone a doppler ultrasonography of the upper limbs which revealed an occlusion of right subclavian artery. A reversed right vertebral arterial flow was demonstrated on hyperemia – ischemia cuff test during the Doppler study. Subsequent arch aortography and coronary angiogram revealed total occlusion of right subclavian artery at its origin and near normal coronary epicardial vessels.

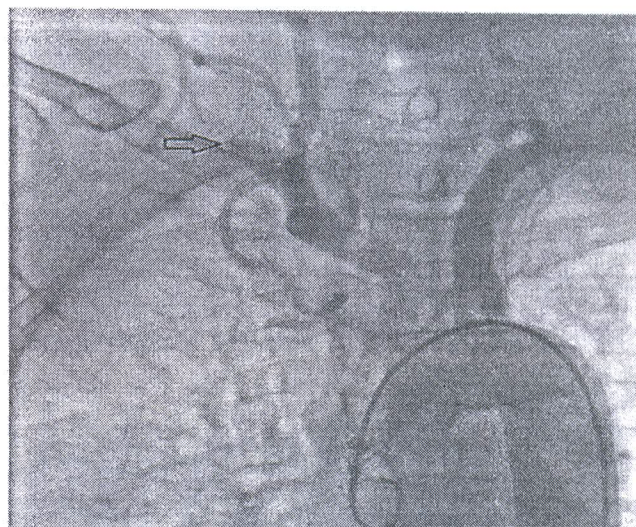


Fig. 1 Arch aortogram showing total occlusion of right subclavian artery at its origin

Discussion

Subclavian steal syndrome is a vaso-occlusive disease involving the subclavian artery proximal to the origin of vertebral artery resulting in retrograde flow in the ipsilateral vertebra-basilar artery.

The vertebra-basilar insufficiency results in typical posterior circulation symptoms.

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With exercise, metabolite induced vasodilatation of the upper limb vessels and a mismatch between the blood flow and the metabolic needs leads to claudication of the arm. Reduced peripheral resistance in the upper limb leads to retrograde flow from the vertebra basilar system which consequently results in posterior circulation ischemia(1).

One theory suggests that subclavian steal does not produce symptoms of cerebral ischemia in the absence of other arterial lesions, in particular hemodynamically significant disease in the carotid artery territory(2).

The symptoms could be graded as asymptomatic, oligosymptomatic and completely symptomatic based on the degree of symptoms of arm claudication and posterior circulation ischaemia.

Typical symptoms are vertigo, dizziness, ataxia, nystagmus, visual disturbances and tinnitus provoked by upper limb exertion.

There would be an inter arm blood pressure difference of >20mmHg and the magnitude of the blood pressure difference correlates with the severity of symptoms(3).

Common aetiology for subclavian occlusion are atherosclerotic disease, Takayasu arthritis and giant cell arteritis.

Diagnosis of subclavian steal is clinical. An inter arm blood pressure difference greater than 20 mm Hg has been proved to be a sensitive threshold for the detection of subclavian steal. The prevalence of the syndrome in patients fulfilling this criteria range from 78% to 88%(4).

Noninvasive color Doppler is regarded as the standard investigation tool for diagnosis.

The hyperemia – ischemia cuff test is a diagnostic test often monitored with the ultrasound to uncover any occult steal. It is normally induced by inflating the arm blood pressure cuff to at least 20 mm Hg above the systolic blood pressure for a few minutes. A rapid deflation of the cuff will lead to increased blood flow in the arm, and if the patient has a hidden subclavian steal, there will be a reversal of blood flow in the ipsilateral vertebral artery. This retrograde flow can be observed using the ultrasound. CT or MR angiography is the confirmatory test to show

the exact site of stenosis as well as other sites of occlusion.

Only a small percentage of patients need surgical intervention.

The blood pressure difference also correlate with the need for surgical intervention. If the patient is oligosymptomatic, a conservative approach is used. Management of vascular risk factors such as dyslipidemia, diabetes, hypertension and cessation of smoking is pivotal.

Endovascular treatment and open surgical interventions like bypass grafting is reserved for patients with intractable symptoms.

References

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