Discrepancy of blood pressure between arms: a case of left subclavian artery occlusion

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DESCRIPTION

A 65-year-old man with no significant medical history presented to the hospital for regular examination. He denied arm claudication, constitutional symptoms, back pain or any traumatic injuries. He had smoked 1–2 packs of cigarette per day for over 40 years. He had been taking medications for diabetes mellitus, hypertension and dyslipidaemia for 8 years. Vital signs showed a blood pressure of 90/62 mm Hg on his left arm and 122/66 mm Hg on his right arm; however, the rest of his vital signs were normal. On physical examination, there was no evidence of bruits or neurological symptoms. Laboratory studies showed C reactive protein (CRP) level of 0.05 mg/dL (reference range <0.3 mg/dL). An enhanced CT showed the left subclavian artery was occluded from the proximal to the origin of left vertebral artery (figure 1). Coronary arteriography showed 50% stenosis in both the left diagonal branch and left posterior descending artery. The left subclavian artery was not enhanced immediately after ascending aortography but was found to be enhanced a few seconds later. This suggested that the left vertebral artery retrogradely supplied the left subclavian artery. He received antiplatelet therapy and continued risk modifications with a diagnosis of left subclavian artery occlusion.

Subclavian artery occlusion is characterised by discrepancy of blood pressure between arms. Blood flow of the branchial artery is supplied from the contralateral vertebral artery to the ipsilateral artery, retrogradely.¹ As a result, ipsilateral blood pressure is lower.

Although some patients show arm claudication and neurological symptoms due to vertebrobasilar ischaemia, most patients are asymptomatic. In

Learning points

- ▶ Subclavian stenosis is associated with total and cardiovascular disease (CVD) mortality independent of CVD risk factors.
- ▶ Discrepancy of blood pressure between both arms could help to identify patients who need further vascular assessment.

asymptomatic patients, hypertension could be overlooked when blood pressure is measured by the arm of subclavian artery stenosis.²

Differential diagnoses for discrepancy of blood pressure include atherosclerosis, Takayasu's arteritis, aortic dissection, congenital diseases and compression in the thoracic outlet. Atherosclerosis is the most common cause of subclavian artery stenosis. History-taking of risk factors for atherosclerosis and traumatic injuries is important. Younger female patients with elevations of body temperature and CRP levels are suggestive of Takayasu's arteritis. MR angiography or CT angiography can be used to confirm the presence of subclavian stenosis. Duplex ultrasonography is accessible and inexpensive, but it depends on operator's skills.

Symptomatic patients are treated with surgical bypass or endovascular intervention, while asymptomatic patients are treated with antithrombotic therapy.³ It is important to control hypertension, diabetes mellitus and dyslipidaemia in addition to smoking cessation.

Subclavian stenosis is associated with total and cardiovascular disease (CVD) mortality independent of CVD risk factors.⁴ Discrepancy of blood pressure for more than 10–15 mm Hg between both arms could help to identify patients who need further vascular assessment.⁵ Evaluating bilateral blood pressure is non-invasive and helpful in screening before angiography.

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Figure 1 Left subclavian occlusion from the proximal to the origin of left vertebral artery on three-dimensional CT.

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