Congenital Right Subclavian Artery Aneurysm: a Case Report

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Abstract. Aneurysms of the subclavian artery are unusual. The most common causes are atherosclerosis and trauma. We report one case of an elongated and tortuous right subclavian artery with an aneurysm involving the origin of the right vertebral artery. The patient underwent resection of the lesion with an end-to-end anastomosis of the subclavian artery and implantation of the right vertebral artery into the right common carotid artery. Results were consistent with a rare congenital subclavian aneurysm.

Introduction

Aneurysm of the subclavian artery is unusual and accounts for only 0.2% of arterial aneurysms (1). Excluding the more common posttraumatic pseudoaneurysms and those associated with aberrant right subclavian artery, atherosclerosis is the most common cause of true intrathoracic subclavian arterial aneurysm (60% of all cases). Other described causes are infection (mycobacterial, syphilitic and bacterial), Marfan syndrome, Ehlers-Danlos syndrome, cystic medial necrosis and Turner syndrome. Only few congenital cases have been reported in the literature (2-4).

Case report

An asymptomatic 36-year old woman presented a low right supraclavicular mass. She had no particular history of trauma or cervical puncture. Computed tomography showed a 3 cm wide contrast-filled mass in the right supraclavicular thoracic space. The arteriogram revealed a tortuous and elongated right subclavian artery with a saccular aneurysm involving the origin of the right vertebral artery (Fig. 1). Vascular examination results excluded other peripheral artery aneurysms. Blood work was within normal limits. Tuberculosis skin test and syphilis serology were negative.

The patient was submitted to an elective repair with an L-shaped supraclavicular cervicotomy. The aneurysm was resected with the proximal portion of the right vertebral artery. An end-to-end anastomosis of the remaining distal and proximal portions of the subclavian artery was performed. The right vertebral artery was implanted end-to-side into the right common carotid artery.

The patient made an uneventful recovery and was discharged on the seventh postoperative day. She remained symptom free for 1 year with no evidence of aneurysms elsewhere.

Pathological examination of the resected artery showed a saccular aneurysm, with the arterial wall considerably thinned. The intima was absent and replaced
with fibrous tissue. The media had fragmented elastic lamellae, with focal loss of elastic tissue. There was no evidence of atherosclerosis or trauma. Culture of the specimen was negative and histological staining failed to show any collagen or elastin defects of the arterial wall.

Discussion

Patients presenting with subclavian aneurysm are often asymptomatic. When symptoms occur, upper chest or shoulder pain is most common. Other clinical presentations include rupture, thrombosis and peripheral emboli resulting in upper extremity ischaemia or stroke from retrograde thromboembolism. Neurological involvement with compression of the brachial plexus or the sympathetic chain has been reported. Haemoptysis and dysphagia are rarely presenting symptoms.

Subclavian artery aneurysms are usually monolateral, but as many as 33 to 47% of patients have aortoiliac or other peripheral aneurysms (5-6). Significant late mortality for rupture of these secondary lesions has been noted. Patients presenting with subclavian aneurysm should therefore be thoroughly assessed for associated aneurysms.

Diagnosis of subclavian artery aneurysm with duplex imaging is easy. Computed tomography or magnetic resonance studies may confirm diagnosis and show other possible thoracic lesions. Complete aortic arch and upper extremity angiography is mandatory to delineate the extent of the aneurysm, assess the sites of vascular occlusion in case of associated thromboembolism, and evaluate the contralateral vertebral circulation competency when the ipsilateral vertebral artery originates from an aneurysmal vessel. These points are crucial in planning appropriate surgical reconstruction.

Untreated, a subclavian arterial aneurysm, especially with symptoms, can be limb-disabling or life-threatening. Reported operative mortality in elective cases is lower than 5%, which justifies surgical treatment even in small lesions in patients otherwise healthy. Right proximal lesions are generally approached safely by median sternotomy whereas high lateral thoracotomy is indicated in left subclavian arterial aneurysms. Ligation without reconstruction should normally not be performed because ischaemic symptoms in the upper limb develop in 25% of treated cases. Anatomical reconstruction with primary anastomosis is appropriate when possible. Otherwise, interposition grafts using either prosthetic material or autologous vein should be used.

This case presented a tortuous elongated subclavian artery with an unusual aneurysm including the right vertebral artery. Due to the length of the subclavian artery, a good exposure with safe proximal control was possible with an L-shaped cervicotomy. As the aneurysm involved the origin of the vertebral artery, reconstruction of the artery was appropriate. Implantation of the vertebral artery into the ipsilateral common carotid artery was an elegant option.

Histological examination of the excised lesion showing no underlying disease of the arterial wall made possible to conclude to a very rare congenital artery aneurysm. Association between a congenital elongated tortuous artery and the development of an aneurysmal wall is unclear and was never described in the case of a subclavian artery.

References