Right Subclavian Artery Thrombosis Due to Cervical Rib

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A 35 years female presented with severe pain of right hand and blackish discoloration of fingertips for last one month. She had no history of palpitation, dyspnoea, angina, fever, polyarthritis and fetal loss. She had past history of intermittent pain, claudication and Raynaud’s phenomenon of same hand for last six months. Her blood pressure was 110/70 mm Hg in left hand. Pulse was not felt in right hand. All pulses in other extremities were felt normally. Pulse rate was 84/min, regular. Temperature of right hand was lower than left. A firm structure was noted in right supraclavicular region. Right subclavian artery bruit was heard. Other systems were normal. Investigations revealed Hb 11 gm%, ESR 32 mm/ hr, CRP< 6 mg/L and blood sugar (F) 72 mg/dl. No coagulopathy and lipid disorders were detected. X-ray revealed right cervical rib. Colour flow Doppler showed thrombus in right subclavian artery. Flow-void was noted in axillary and radial arteries. Cervical rib was the cause of subclavian artery thrombosis in this case of thoracic outlet syndrome (TOS). Cervical rib was excised. Thromboembolectomy and reconstruction of subclavian artery with saphenous venous graft were done. Patient improved symptomatically and blood flow was restored in right upper limb.

TOS is a mechanical space problem, in which brachial plexus and subclavian vessels are compressed as they course through narrow passageways from root of neck toward axilla. Interscalene triangle is most proximal of these passageways and is bordered by anterior scalene muscle anteriorly, middle scalene muscle posteriorly and medial surface of first rib inferiorly. Second passageway is costoclavicular triangle. It is bordered anteriorly by middle third of clavicle, posteromedially by first rib and posterolaterally by upper border of scapula. Last passageway (subcoracoid space) is beneath the coracoid process just deep to pectoralis minor tendon. Congenital abnormalities like fibrous bands, cervical ribs, and anomalous muscles constrict these narrow passageways further. Thoracic outlet compression commonly leads to neurologic features involving lower trunk or medial cord of brachial plexus. Vascular symptoms (venous > arterial) are less common and present with or without neurologic symptoms. Arterial symptoms are usually due to cervical or first rib. Cervical rib leads to endothelial injury and intimal damage of subclavian artery that predispose to platelet deposition and thrombus formation. Intimal damage is also contributed by compressive forces exerted by shoulder girdle muscles during physical activity. Atherosclerotic changes and hypercoagulable states may contribute to thrombus formation. Thrombus may cause embolisation to distal extremity. Cervical rib can also cause subclavian artery stenosis or aneurism. Acute subclavian artery thrombosis leads to a cold, painful, pulseless upper extremity. Chronic occlusion may lead to upper extremity claudication or it may remain asymptomatic due to collateral development. The condition may precipitate subclavian artery steal syndrome. Decompressive operations like anterior scalenectomy and excision of cervical or first rib, thrombectomy and arterial reconstruction are useful treatments of arterial TOS.¹

References