Arterial Compression in a Young Adult due to the Presence of a Cervical Rib: CT and CT Angiographic Findings

Genç Erişkinde Servikal Kostaya Bağlı Arteriyel Kompresyon: BT ve BT Anjio Bulguları

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A cervical rib generally arises from the seventh cervical vertebra and is known as an anomalous accessory rib or “Eve’s rib” [1]. A recent literature survey reported that cervical ribs are present in less than 1% of the normal population and are asymptomatic in about 90% of cases [2]. Complete cervical ribs are fused with the tubercle on the upper aspect of the first thoracic rib, very close to the insertion site of the anterior scalene muscle. The supraclavicular part of the subclavian artery is usually substantially displaced in the anterior direction. Cervical ribs that are termed “incomplete” are smaller and do not articulate directly with a thoracic rib. Incomplete ribs generally have an associated fibrous band, which inserts into the first thoracic rib and may lead to compression of the adjacent neurovascular structures.

An 18-year-old woman suffering from weakness and pain in her left arm and swelling of her left hand was referred to the Radiology Department. Computed tomography (CT) angiography was ordered after the physical examination, which raised suspicion of an arterial occlusion in her left upper extremity. CT angiography demonstrated a typical complete cervical rib originating from the seventh rib and extending into the supraclavicular region (Figure 1). The cervical rib was fused with the upper contour of the first thoracic rib and caused obstruction of the subclavian arterial lumen by compressing it (Figures 1 and 2). A thrombus was identified adjacent to the proximal side of the external compression.

It is easier to identify cervical ribs on spinal images rather than on chest X-rays. The rib and the articulating vertebra are better defined on spinal film. Cervical ribs often articulate with the anterior part of the first rib. They sometimes occur bilaterally, and their sizes vary. Cervical ribs must also be distinguished from elongated transverse processes of the seventh cervical vertebra. Deformation in cervical ribs may cause compression of the underlying major vessels and severe thoracic outlet syndrome. CT with multiplanar reconstruction capability is a valuable tool to illustrate the relationship between bone deformity and major arterial vessels. Arteriography, which is an intraluminal imaging method, can also be useful for diagnosis and preoperative evaluation [2]. Resection of the cervical rib may resolve the symptoms in selected cases.

References