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CASE REPORT

CERVICAL RIB – A CASE REPORT

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ABSTRACT

A cervical rib in humans is a supernumerary (or extra) rib which arises from the seventh cervical vertebra. Sometimes known as "neck ribs", their presence is a congenital abnormality located above the normal first rib. A cervical rib is estimated to occur in 0.6% (1 in 150 people) to 0.8%(1) of the population. Individuals may have a cervical rib on the right, left or both sides (2). Most cases of cervical ribs are not clinically relevant and do not have symptoms; cervical ribs are generally discovered incidentally (2). However, they vary widely in size and shape,[1] and in rare cases, they may cause problems such as contributing to thoracic outlet syndrome, because of pressure on the nerves that may be caused by the presence of the rib.

A cervical rib represents a persistent ossification of the C7 lateral costal element. During early development, this ossified costal element typically becomes re-absorbed. Failure of this process results in a variably elongated transverse process or complete rib that can be anteriorly fused with the T1 first rib below

INTRODUCTION

Cervical Rib refers to an abnormal protrussion in the cervical region which can either be due to abnormal enlargement of the transverse process of C7 vertebra or a small rib or fibrous band running from the 7th cervical vertebra to the first true rib or to the sternum but usually it is present posteriorly up-to a short distance. It is usually diagnosed in middle age group persons though is present since birth. The cause is that by middle age, the shoulders start drooping which causes the cervical rib to get depressed and hence compressing the nerve root of the concerned region. This rib is usually asymptomatic but it may give rise to neurological symptoms if it exerts pressure on the subclavian artery (3) or the brachial plexus called as thoracic outlet syndrome. Thoracic outlet syndrome symptoms include neck pain, shoulder pain, arm pain, numbness and tingling of the fingers, impaired circulation to the extremities (causing discoloration). Diagnosis of thoracic outlet syndrome is suggested by the symptoms and physical findings and is sometimes supported by electrical and/or radiology tests. Treatment of thoracic outlet syndrome usually involves physical-therapy exercises and avoiding certain prolonged positions of the shoulder.

Material

A 36 years female, complaining of pain at right neck for 2 months associated with swelling of neck at right side. She is also complaining of tingling sensation at the inner aspect of right upper limb. The swelling of the neck was immobile, soft in consistency with ill-defined margins. The pain with tingling sensation of the right inner aspect of right limb exacerbated during activities like writing, lifting weight. Pain is acute in onset, intermittent, dull aching and non-radiating. All the routine investigations were done.

Observation

Chest X ray shows bilateral cervical rib. On the right side it is completely bony and on left side it is partly fibrous. Ptosis is seen on the right side, no other features of Horners syndrome are identified. The hypothenar eminence on the right side is not prominent and was flattened. Adson's test was positive, Elevated Arm Stress Test was positive.

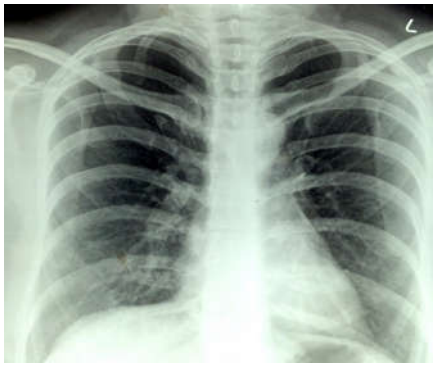

Figure - 1 Chest X ray

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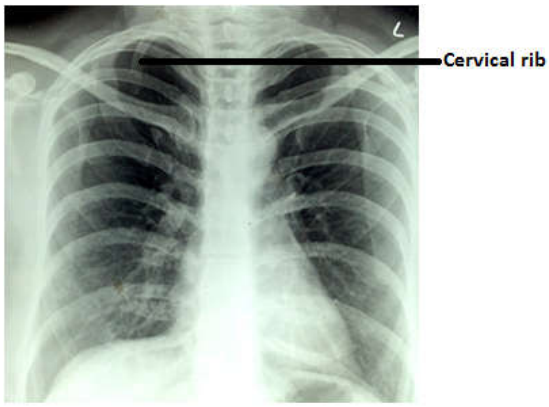

Figure - 1 Chest X ray

Figure – 2 Ptosis of right eye

Figure -3 Flattening of hypothenar eminence

DISCUSSION

Cervical rib may be a fully formed bony rib or just a thin strand of tissue fibers, which will not always show up on any X-ray or MRI scans. If the extra rib is only partially formed, it may either end in a swelling that shows as a lump in the neck or it may tail off into a fibrous band of tissue that connects to the first proper rib. There is evidence to prove that long continued pressure of the cervical rib on the brachial plexus brings about a chronic aseptic inflammatory reaction which, if continued long enough, may bring about a permanent fibrosis (4). The deformity is usually bilateral (twenty-four out of thirty-one cases) and is more common in women than in men (twenty-two females and nine males). The size of the cervical rib is not the index to the symptoms. It is estimated that only 10 per cent of cervical ribs cause symptoms (5). According to Schein *et al*. (6) a cervical rib is present in 0.5–0.7% of the population and appears more commonly in females than males, in a ratio of 2:1. Halstead (as cited by Connell *et al*. (7) was the first to report that when an artery is subjected to incomplete pressure an aneurysm develops distal to the point of pressure. At first it was thought that the circulatory changes were caused by stretching or kinking of the subclavian artery over the cervical rib or by thrombosis within the artery, but Todd (8) advanced a theory of nervous origin of vascular changes in the hands. He showed anatomically that the lowest trunk of plexus was usually in closer opposition to the first thoracic rib or the cervical rib than the subclavian artery. He suggested that the changes in the arteries were trophic in nature and due to pressure causing paralysis of the sympathetic fibers which enter the arm in the lowest trunk of the brachial plexus. These fibers are distributed to the peripheral vessels, and irritation of them induces spasm of the arterial wall, obliteration of. The vasa vasorum and eventually such changes in the health of the vessel wall as to lead to thrombosis and occlusion. He considered that the artery was too elastic a structure to be damaged by stretching over a cervical rib. Telford and Stopford (9) supported these views and remarked that paralysis of the vasomotor fibers does not produce the vascular changes found in these cases. The pallor and coldness, they say, indicate vasoconstriction due to irritation of the sympathetic fibers. Mutations in Hox genes have been shown to cause the development of cervical ribs from the costal or ventral processes of the primitive vertebral arches.

Cervical rib fracture due to neck trauma is an extremely rare cause of TOS (10). Isolated fracture of a cervical rib producing symptoms of thoracic outlet compression has been reported (11). In the present two case reports the presence of cervical rib leads to angulation of subclavian artery which may lead to development of aneurysm, it may also can cause pressure over brachial plexus. The first unsuccessful resection of Cervical rib in a patient with thoracic outlet syndrome was performed by Coote in 1861(12)

CONCLUSION

Such Anatomic variations like cervical rib are worthy to consider in cases of vascular disorders of the upper extremities, and with rational indications, exploratory surgery on this region would be warranted.

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