

## Thoracic outlet syndrome due to abnormal first rib-A case report

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### Introduction

All the conditions of interest to physician, none has been so poorly understood or diagnosed as thoracic outlet syndrome. Thoracic outlet syndrome refers to compression of the subclavian vessels and nerves of the brachial plexus in region of the thoracic inlet. It was described by Sir Astley Cooper in 1821 and since then various articles has been written on it.

Symptoms commonly develop secondary to neural compromise, however, vascular and vasculoneurological symptoms are reported. The patient's population most commonly affected by thoracic outlet syndrome is middle aged women. Cervical ribs are the most common cause of thoracic outlet syndrome. Congenital abnormal first and second ribs have been reported to cause thoracic outlet syndrome, with a

disproportionately large percentage manifesting with vascular symptoms [1]. We report a rare case of abnormal first rib producing neurological symptoms.

A 31 year old female presented with history of pain in both upper limb since 3 years, with pain being more in the left upper limb compared to right side. Pain was increasing in severity since last 4 months. She also gave history of swelling in the lower part of the neck on the left side.

She did not have any other symptoms and her past history was non contributory.

Examination revealed tenderness of the base of the neck on the left side along with diffuse swelling. All the pulses of upper limb were palpable clinically. Adsons as well as Roos test were negative. Chest x-ray film [Figure 1] revealed an abnormal first

rib. Doppler seen of left upper limb revealed a triphasic flow pattern in subclavian, axillary, brachial and ulnar artery with a monophasic flow in radial artery. A CT angiogram was done which showed fusion of left first rib with lateral aspect of second rib causing indentation on left subclavian artery. The artery shows post indentation dilatation by the downsloping first rib.

Patient underwent excision of the first rib along with scalenotomy through supraclavicular approach. Her symptoms improved within 48 hours, after which she was discharged.

**Figure 1: Chest x-ray showing abnormal first rib [Arrow]**



### Discussion

Thoracic outlet syndrome refers to abnormal compression of nerve, arterial and less frequently, venous structures at the base of the neck or thoracic outlet. The incidence of Thoracic outlet syndrome has been reported to be approximately 0.3-2% of general population [2].

Potential causes of thoracic outlet syndrome are a cervical rib [2], abnormal ligamentous tissue and hypertrophy of the scalenus anterior muscle, as well as postural effects that interfere with the normal relationship between the first rib and those structures overlying it.

Pain is the most common symptom of thoracic outlet syndrome. Neurologic rather than vascular symptoms predominate in 95% of thoracic outlet syndrome patients [3]. Paresthesia and muscle weakness may also occur.

The most common cause of thoracic outlet syndrome is the cervical rib which is present in 1% of the population but produces symptoms only in 5-10% of the patients. Congenital first rib abnormalities are rare causes of thoracic syndrome.

Patients with thoracic outlet syndrome from abnormal first rib have been

described previously [4]. 11 of these patients have been vascular symptoms and 5 had neurological symptoms [3]. Most cases of thoracic outlet syndrome resulting from first rib aberration involve hypoplasia of the first rib with fusion at anterior margin of the second rib [1].

**Conclusion:-**Thoracic outlet syndrome due to abnormal first rib is a rare entity. Most of the cases present with neurological symptoms. Resection of the first rib is the treatment of choice for symptomatic first rib abnormalities.

### **References**

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