

Case Report

Pseudoarthrosis of unilateral cervical rib and 1st rib exostosis-presenting with supraclavicular mass and thoracic outlet syndrome

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ABSTRACT

Cervical rib is defined as the presence of supernumerary rib at the 7th cervical vertebrae possibly associated with mutations in Hox genes. Cervical rib may have a free end or may be fused with the first rib by bone bridge or fibrous band. However, the incidence of pseudoarthrosis of cervical rib with exostosis from the first rib is reported rarely in literature. This report documents a unilateral pseudoarthrosis of cervical rib with 1st rib exostosis presenting as a supraclavicular mass with thoracic outlet syndrome.

Keywords: Cervical rib, Thoracic outlet syndrome, Pseudoarthrosis

INTRODUCTION

Cervical rib is defined as the presence of supernumerary rib at the 7th cervical vertebrae possibly associated with mutations in Hox genes. Cervical rib may have a free end or may be fused with the first rib by bone bridge or fibrous band. Clinically, most patients are asymptomatic with some patients developing thoracic outlet syndrome as a result of pressure on the brachial plexus or subclavian vessels. The incidence of cervical rib is approximately 1% in the healthy population and in almost 30% of patients with thoracic outlet syndrome.¹ Pseudoarthrosis can occur rarely between the cervical rib and the first rib.^{2,3} However, to the best of our knowledge, the incidence of pseudoarthrosis of cervical rib with exostosis from the first rib was documented only in 2 case reports.^{4,5} This report documents a case presenting with right supraclavicular mass and symptoms of thoracic outlet syndrome which was diagnosed to be unilateral pseudoarthrosis of cervical rib with 1st rib exostosis.

CASE REPORT

A 36 year old female presented with a history of right supraclavicular swelling noticed since 15 years. She was

asymptomatic for 15 years and then developed complaints of aching pain, numbness, tingling and fatigue on performing strenuous physical activity with the right upper limb. She had no neck pain or restriction of neck movements and no history of trauma. A single, immobile, hard, non-fluctuant, non-pulsatile, non-tender round mass with smooth surface was noted in the right supraclavicular region with no local rise of temperature, redness or discoloration. No definitive neurological finding was noted other than generalised paraesthesia in the right upper limb and reduced grip power in right hand. Radial pulse was palpated with normal volume and characteristics in resting position. However, on performing Adson's test, there was a noticeable decrease in strength and volume of radial pulse on the right side demonstrating subclavian artery compression. Roos stress test reproduced the usual symptoms encountered by the patient along with inability to complete the test due to fatigue and pain. A provisional diagnosis of thoracic outlet obstruction was considered and radiological evaluation revealed a right bony cervical rib from 7th cervical vertebrae pseudo articulating with an exostosis from the first rib.

Since her symptoms were aggravated on strenuous activities at work, physiotherapy and occupational therapy

was initiated along with activity modifications, postural correction, and avoidance of strenuous overhead activities. She had symptomatic improvement with 1 month of conservative management and is presently on regular follow-up. If the symptoms recur and doesn't improve with conservative measures, then the possible need for surgical rib excision and decompression was explained to the patient.



Figure 1: The right cervical rib pseudoarthrosis.



Figure 2: The right cervical rib pseudoarthrosis.

DISCUSSION

In the present report pseudoarthrosis was noted between the cervical rib and an exostosis from the first rib, which to the best of our knowledge was previously documented in only 2 case reports.^{4,5} Cervical rib and cervical rib pseudoarthrosis should be considered in a supraclavicular hard swelling as noted by Jeong et al.⁶ The management of cervical rib is based on the severity of symptoms, patients

can be given a trial of conservative management including analgesics, postural correction, physiotherapy, and occupational therapy with surgical intervention like rib resection and scalenectomy decompression as a last resort.⁷

CONCLUSION

In this case conservative measures provided adequate symptomatic relief for the patient and surgical intervention was reserved if symptoms recur or worsened.

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REFERENCES

1. Henry BM, Vikse J, Sanna B, Tattera D, Gomulska M, Pękala PA, Tubbs RS, Tomaszewski KA. Cervical Rib Prevalence and its Association with Thoracic Outlet Syndrome: A Meta-Analysis of 141 Studies with Surgical Considerations. *World Neurosurg.* 2018;110:e965-8.
2. Dixit M, Gan M, Nishanimath N, Bhagyalakshmi B, Sajjan P, Dayal A. Double cervical rib with uncommon presentation. *Indian J Thorac Cardiovasc Surg.* 2010;26(1):30-33.
3. Chandak S, Kumar A. Usefulness of 3D CT in Diagnosis of Cervical Rib Presenting as Supraclavicular Swelling of Short Duration. *J Clin Diagn Res.* 2014;8(5).
4. Terzi R, Ozer T. Pseudoarthrosis of Cervical Rib and 1st Rib Exocytosis in a Patient Presenting with a Supraclavicular Mass: Case Report. *J PMR Sci.* 2016;19(3):216-8.
5. Saadi M. Unilateral cervical rib, with exostosis of the first rib and pseudoarthrosis. *Br J Clin Pract.* 1996;2:93.
6. Jeong M, Mo J, Choi I, Lee M. Three Cases of Cervical Rib. *Kor J Otorhinolaryngol-Head Neck Surg.* 2011;54(7):482-5.
7. Chang K, Likes K, Davis K, Demos J, Freischlag J. The significance of cervical ribs in thoracic outlet syndrome. *J Vasc Surg.* 2013;57(3):771-5.

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