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RESEARCH ARTICLE

NEUROGENIC TOS PRESENTING AS CERVICAL RADICULOPATHY: A CASE REPORT

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ABSTRACT

Thoracic outlet syndrome is a frequently overlooked complex clinical condition. We are reporting a case of upper extremity radicular pain and motor weakness, mimicking cervical radicular pain due to disc prolapse. The patient failed to respond to the cervical epidural steroid injection. On re-evaluation of signs and symptoms, it was clinically diagnosed as neurogenic TOS and successfully treated with ultrasound-guided scalene muscle block. Clinicians must understand the pathology and types of presentation of TOS and should have a high index of suspicion when evaluating upper limb and shoulder region pain symptoms, as any diagnostic criteria for TOS are yet to be established so that the patients are directed to appropriate timely therapeutic interventions.

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INTRODUCTION

Thoracic outlet syndrome is a clinical condition with various neurological and vascular manifestations in the upper limb. It is caused by compression of the neurovascular bundle (brachial plexus or subclavian vessels) in the Interscalene muscle plane, or costoclavicular space, and or subcoracoid space causing pain, paraesthesia, pallor, motor weakness in the shoulder and upper extremity. In some cases, muscle atrophy (1). Some articles report an incidence of 3 to 8 per 1000 population (3) Based on the structure of compression, TOS can be classified into neurogenic (nTOS), arterial (aTOS), and venous (vTOS). Out of which 90% of cases are neurogenic followed by venous and arterial etiologies (2). Neurogenic TOS occurs by brachial plexus (C5-T1) irritation or compression, and results in pain, paresthesia and numbness of shoulder, arm and fingers. Sometimes pain over the anterior chest, trapezius and occipital headaches (4). So these symptoms can be confused with cervical radiculopathy. Any movements like the elevation of the hand or overhead abduction of the arm can exacerbate the pain. Arterial TOS presents as ischemia of fingers, paraesthesia, pallor and claudication pain. Whereas venous TOS presents as arm pain, swelling or cyanosis (1) (4).

There are many possible causes of TOS, ranging from congenital anomalies to repetitive strain injuries and h/o trauma. Nearly 70% of cases are related to soft tissue aetiologies such as scalene muscle hypertrophy, regional tumours or a muscular variation in scalenus minimums muscle, and the remaining 30% are related to bony abnormalities such as cervical ribs (5). All can result in compression of the neurovascular bundle traversing the thoracic outlet. The Diagnosis of TOS depends not only on the clinician's familiarity with pathophysiology but also on the evaluation of symptoms and clinical suspicion. These should be confirmed with provocative tests and radiographic and vascular studies. (3)(5)

CASE REPORT

Here, we report an interesting case of a 49-year-old male, who visited our pain clinic with complaints of right upper chest, shoulder, and arm pain radiating to fingers with tingling and numbness for 7 months. On physical examination, right trapezius muscle trigger points and decreased handgrip power (4/5) were found. MRI showed mild disc

bulge at C5-6 level. Initially, as the signs and symptoms were in favour of cervical radiculopathy, we performed a fluoroscopic guided cervical epidural steroid injection. But the patient didn't get any relief. Then USG guided trigger point injection of the trapezius muscle & dry needling was performed but the patient had no relief and returned with the same complaints. So, we decided to reassess the patient's signs and symptoms along with Provocation tests of TOS. The Elevated Arm stress test and upper limb tension tests were positive. but radiological (X-ray neck, CT/MRI and Colour Doppler of upper limb) and Electromyography (EMG) / Nerve conduction (NCV) tests were normal. On USG screening of Scalene muscles, we noticed hypertrophied anterior and middle scalene muscles on the affected side. which is a common cause of neurogenic TOS in 70% of patients (5). Clinically after re-evaluation, we diagnosed this as a neurogenic TOS. To relieve muscular compression by scalene muscles, we advised him diagnostic USG-guided scalene muscle block with local anaesthesia and steroid. After obtaining written consent patient was taken into the procedure room. As per standard ASA guidelines monitors are attached. The patient was positioned supine with the neck slightly rotated to the left. Under all aseptic precautions Ultrasound scanning of the right anterolateral neck was performed. Inj. 0.25% bupivacaine 4cc + 20mg triamcinolone injected in anterior and middle scalene muscles. After immediate post-procedure, the patient had 50% relief of pain And the NRS score improved from preprocedural 7/10 to 3/10 after the procedure. We repeated the same procedure after 1 week with the same result. During his follow-up visit after 1 month, the patient had an NRS score of 2/10 and we advised him to continue physiotherapy.

DISCUSSION

This case demonstrates the significant overlap in signs and symptoms of nTOS and cervical radiculopathy. In both the clinical entities, patients mainly complaints of neck and arm pain numbness and weakness in the affected upper extremity. the misdiagnosis of cervical radiculopathy in the case of TOS can delay the initiation of appropriate treatment resulting in prolonged patient suffering. Although less common, when evaluating a patient with neck or upper extremity pain, it is important to include TOS in the initial differential diagnosis (6). In our case, it was initially diagnosed as cervical radiculopathy, but cervical epidural steroid injection did not relieve patients' symptoms. After reassessment of symptoms and correlating with positive provocation tests, the clinical diagnosis of TOS was made by ultrasound-guided scalene muscle injection with a local anaesthetic. As reported by Braun et al, Scalene muscle block is often performed to differentiate primary sources of upper limb pain and weakness with thoracic outlet syndrome as a differential diagnosis. A case report by Chandra et al in 2021 reported that they had a patient with complaints of neck pain with radiation to the shoulder and hand with tingling which was diagnosed as neurogenic TOS by performing ultrasound-guided diagnostic block of anterior and middle scalene injection with local anaesthetic drug (2% lignocaine) Which is incongruence with our case report. The muscle plane of the scalene group is frequently implicated in neurogenic TOS which is formed between anterior and middle scalene muscles. Any trauma at the neck that leads to muscle spasm, hypertrophy and scarring. so, these muscles become a potential source to compress the brachial plexus that leads development of TOS. The management of TOS includes nonsurgical techniques like the injection of local anaesthetic agents, steroids and botulinum toxin into scalene muscles aim to reduce inter-scalene pressure. Also, these injections provide diagnostic value to surgical interventions like scalenectomy.

CONCLUSION

Consideration of TOS in the initial differential diagnosis is essential for clinicians evaluating patients with upper extremity pain, numbness and motor weakness. Misdiagnosis of TOS as cervical radiculopathy can lead to inappropriate interventions and prolonged suffering of patients. Conservative therapeutic pain management interventions like scalene muscle injections provide superior pain relief with good diagnostic value. (also, to surgical interventions like scalenectomy), especially in neurogenic TOS

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