

Identification of Ganglion cyst causing suprascapular nerve neuropathy by high resolution neurosonography

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Abstract

Suprascapular neuropathy is a rare cause of non-specific shoulder pain affecting all age groups. Magnetic resonance imaging is the most common modality utilized to investigate the cause of suprascapular neuropathy. We report here a case of 22 year old man who presented with diffuse right shoulder region pain and severe wasting of the right infraspinatus muscle of 2 months duration. He was engaged in regular overhead activities at a gymnasium for about 2 years. A possible diagnosis of suprascapular nerve entrapment was considered. The patient was investigated with high resolution neurosonography, which showed a ganglion (paralabral) cyst at the spinoglenoid notch compressing the suprascapular nerve. We propose the use of neurosonography as an economical and effective tool for initial screening of non-specific shoulder pain with or without wasting/weakness of scapular muscles. An early identification of the cause of the neuropathy prior to the onset of muscle weakness/wasting, and therapeutic intervention is able to avoid permanent disability.

INTRODUCTION

Shoulder pain is a common ailment present uniformly in all age groups commonly due to tendonitis, bursitis, rotator cuff tears, acromioclavicular joint osteoarthritis and cervical spondylosis.¹ Suprascapular nerve neuropathy (SSN) due to entrapment of the nerve is a rare cause of shoulder pain. We report here a young physically active man with SSN secondary to a ganglion (paralabral) cyst at the spinoglenoid notch identified by high resolution neurosonography.

CASE REPORT

A 22 year old medical student presented with right posterior shoulder pain and wasting of right scapular muscles of 2 months duration. He had been performing heavy weight lifting in the gymnasium consisting predominantly of overhead exercises for the past 2 years. There was no history of trauma/iatrogenic injury to the shoulder. Physiotherapy and non-steroidal anti-inflammatory drugs were tried with no benefit. On examination, he had severe wasting with mild weakness of right infraspinatus muscle (Figure 1A). There was no sensory impairment. Shoulder joint movements were full. Crossed adduction test was positive on the right side. A

possibility of right SSN was considered. Nerve conduction study (NCS) of suprascapular nerve for evoked motor response from infraspinatus showed increased latency of 4.15 seconds on the right side as compared to 2.1 seconds on the left. Compound muscle action potential (CMAP) elicited from infraspinatus was lower in amplitude on the right (3.5mv) as compared to the left (6.9 mv). The latencies and CMAP amplitudes of both supraspinatus were normal. Concentric needle electromyography (EMG) of both supra and infraspinatus showed evidence of chronic denervation with partial reinnervation in right infraspinatus and normal potentials in other muscles. A high resolution neurosonography (Philips Epiq 7G machine using linear 18Hz transducer) of the right shoulder showed a hypoechoic lesion measuring 2.68 x 1.39 x 2.46 cm, probably a ganglion cyst, compressing the suprascapular nerve in the spinoglenoid notch (Figure 1B). This finding was corroborated by MRI of the right shoulder (Figure 1C, D), where the cyst was seen extending into the posterior labrum with no labral tears.

DISCUSSION

The suprascapular nerve arises from C5, C6 roots,

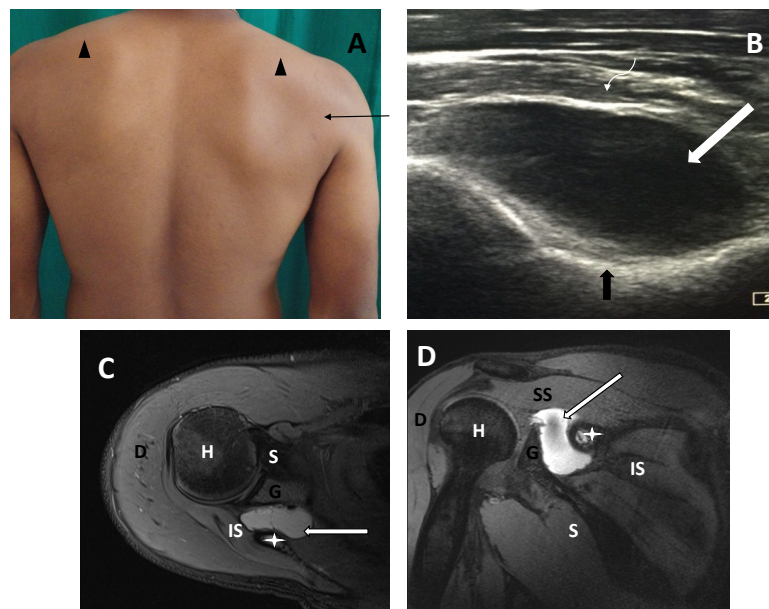


Figure 1. (A) Severe wasting of right infraspinatus (thin black arrow) with preserved bilateral supraspinatus (black arrowheads) and drooping of right shoulder. Note the prominent muscles due to physical exercise. (B) High resolution Neurosonography of the right shoulder revealing a hypoechoic ganglion cyst measuring 2.68 x 1.39 x 2.46 cm (thick white arrow). Other structures observed are scapular spine (black arrow) and infraspinatus (curved arrow). (C&D) Axial and coronal Proton Density MR images of the right shoulder showing a hyperintense mass with clear margins (thick white arrows) impinged between glenoid fossa (G) and scapular spine (Star) extending into the posterior labrum without any labral tears. [D- Deltoid muscle, S- Subscapularis, SS- Supraspinatus, IS- Infraspinatus, H- Head of humerus].

traverses the suprascapular notch and enters the supraspinous fossa supplying the supraspinatus muscle. It then curves around the lateral border of scapular spine entering the infraspinous fossa to supply the infraspinatus muscle.² SSN was first described in 1959³ and compression at the spinoglenoid notch was later reported in 1981. Causes of SSN include traction due to overhead activities, trauma, infection or compression by a space occupying lesion.¹ Ganglion cysts account for a majority of entrapment and develop when labral tears cause a valve like effect forcing synovial fluid into surrounding tissues. Other causes include lipoma, Ewings sarcoma, chondrosarcoma, bone cyst, metastatic renal carcinoma or hypertrophied transverse scapular ligament.^{4,5} The majority of cases are diagnosed and managed by orthopaedic surgeons and presentation to neurologists is usually for diagnostic purposes.

Pain resulting from irritation of this nerve is deep, and poorly localized. It is greatest at the posterolateral aspect of the shoulder that may be aggravated by overhead activities radiating occasionally to neck, arm or chest as seen in this patient.¹ Pain may be elicited by cross body

adduction with arm extended or internally rotated. It may be associated with weakness in abduction and external rotation of arm along with wasting of supraspinatus (proximal lesions at suprascapular notch) and infraspinatus or isolated infraspinatus atrophy only.^{6,7} History of trauma or repeated shoulder activities like in swimming or playing volley ball may be present. In a series of 35 patients, 8 had history of sports or overhead activities.⁶ Our patient had been practising in a gymnasium and participated in weight lifting for over 2 years. Suprascapular nerve entrapment needs to be considered in the differential diagnosis of shoulder girdle pain and appropriately evaluated to prevent misdiagnosis and incorrect treatment.⁸ In an earlier study, 5 patients were diagnosed as subacromial impingement syndrome, which later was confirmed to be SSN. Though the presentation was typical here, the clinical diagnosis could be elusive if imaging studies were not performed.

NCS and EMG aid in establishing the diagnosis of SSN, and ruling out other possible causes of shoulder pain as demonstrated in this report.⁸ Although majority of articles have confirmed SSN neuropathy by MR imaging, ultrasonography has also been used for diagnosis.⁹ We could arrive at

a clear diagnosis by performing high resolution neurosonography which is also cost effective and simple to perform. MRI can play an important role in identifying direct and indirect signs of neuropathy and also confirm the presence of nerve compression, depict space-occupying lesions, and exclude other intrinsic lesions of the shoulder. Although it was more costly, MRI has been reported to be commonly performed in patients with shoulder pain of uncertain origin, to determine the morphologic cause, precise location, duration of nerve injury and muscle denervation.⁴ We propose that neurosonography could instead be the initial choice of investigation, and MRI considered for further characterisation as necessary.

For non-compressive causes of SSN, treatment includes rest, physiotherapy and analgesics. Ganglion cysts usually require surgical intervention like needle aspiration, open excision or arthroscopic decompression with repair of labral defects. Distended veins at spinoglenoid notch may cause compression and needs to be distinguished from ganglion cyst before aspiration is carried out. Ultrasound guided aspiration is reported to be an efficient procedure with good pain relief and avoid time delay for surgical intervention.¹⁰ Ultrasound and computed tomography (CT) guided aspiration are reported to have similar results and hence ultrasound may be considered as a sensitive and cheaper modality of investigation. Arthroscopic evaluation of glenohumoral joint with cyst drainage and repair of labral lesions has been found to have good results with less chance of recurrence.^{1,5}

In conclusion suprascapular nerve entrapment should be a differential diagnosis in patients presenting with vague or diffuse shoulder pain. Unless suspected and looked meticulously for SSN, misdiagnosis as rotator cuff tears or bursitis may occur. Early evaluation is needed for preventing atrophy and residual deficits; ultrasound with high resolution probe is an affordable and easily available modality for identification of the lesion.

DISCLOSURE

Conflict of interest: None

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