Distal Suprascapular Neuropathy from a Spinoglenoid Cyst Presenting as a Rotator Cuff Lesion: A Case Report with Electrophysiologic Evaluation

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BACKGROUND

Defining the origin of pain emanating from the shoulder region is often a challenge for the clinician. Typically, one focuses on the osseous, muscular and intra-articular structures as a culprit for shoulder pain and dysfunction. The following case study illustrates how a focal nerve lesion from a spinoglenoid notch cyst can selectively compromise the suprascapular nerve (SSN) to the infraspinatus muscle (IS) and confound the clinical evaluation. This case illustrates the value of imaging and electrophysiologic testing (EPT) in isolating the location of the lesion, determining the extent of nerve injury and tracking recovery.

CASE HISTORY

This was a 33-year-old male with a several year history of persistent generalized bilateral shoulder pain recently aggravated with strenuous overhead activity. He also complained of painful crepitus emanating from the region of the AC joints. His initial orthopedic physical exam and radiographs confirmed the presence of bilateral AC joint arthrosis. Additionally, a tear of the right rotator cuff was suspected due to weakness of shoulder external rotation.

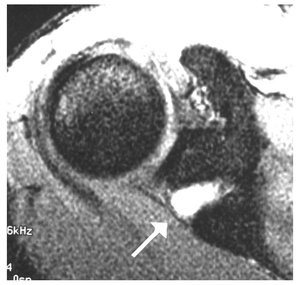
IMAGING AND PHYSICAL THERAPY EXAM

MRI was undertaken to evaluate for a rotator cuff lesion and was negative for such. However, a large spinoglenoid notch cyst was present and thought to be compressing the SNN **(Figure 1).** He was referred to this presenter for EPT. His clinical exam showed isolated muscle atrophy about the IS fossa and weakness of shoulder external rotation **(Figure 2).** He had full active and passive ROM and impingement tests were equivocal. Tenderness over the AC joints was evident bilaterally. Cervical spine exam was normal as was the remainder of the neurological exam.

ELECTROPHYSIOLOGIC TESTING

The EMG exam of the right upper extremity and parascapular muscles was conducted and revealed decreased motor unit activity and muscle denervation isolated to the IS muscle. Nerve conduction testing simulating the SSN and recording from the IS showed a normal latency to the IS, but a 50% decrease in the amplitude of the response when compared to the asymptomatic left side response **(Figure 3).** The remainder of the EPT was normal, including the EMG exam of the supraspinatus muscle.

IMAGES



Figures 1: Axial View MRI Showing the Spinoglenoid Cyst

Figure 2: Isolated right infraspinatus atrophy (not this patient) [5]

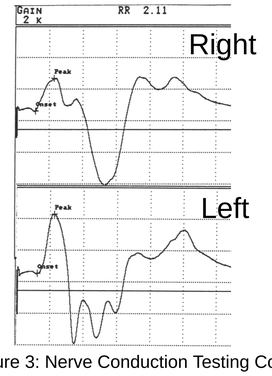


Figure 3: Nerve Conduction Testing Comparing Evoked Response to the IS

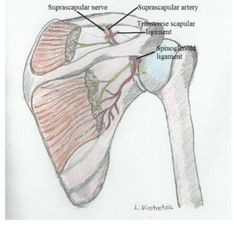


Figure 4: Anatomy of the course of the SS nerve [4]

MANAGEMENT

An orthopedic surgeon recommended surgery and a large 2.5 cm X 1.5 cm cyst was found compressing the SSN to the IS at its turn around the spinoglenoid notch. A distal clavicle resection was also performed for the AC arthrosis. A repeat EPT was performed 12 weeks post-op. Findings were consistent with ongoing muscle reinnervation by both nerve regeneration and axonal collateral sprouting. These findings correlated with the patient's account of improved shoulder complex function and strength. Minimal shoulder external rotation weakness was evident.

DISCUSSION

SSN is a relatively rare disorder and often overlooked initially due to a clinical presentation mimicking rotator cuff pathology.[1] The SS nerve itself can be impinged by the transverse scapular ligament at the suprascapular notch **(Figure 4)** or injured in a fracture.[1-2] Distal SSN lesions can occur due to compression from cysts, entrapment by the spinoglenoid ligament **(Figure 4)**, traction to the nerve or fracture.[1-4] The origin of these cysts is unclear, but they seem to associate themselves with tendon sheaths and synovial joint capsules. They are also associated with labral lesions and overhead activities.[1-4]

CONCLUSION

An isolated neuropathy of the distal suprascapular nerve from a spinoglenoid notch cystic mass is a rare occurrence, but should be considered where isolated weakness of the infraspinatus muscle exists. Imaging and EPT help to delineate the location and severity of the lesion and assist with tracking recovery. [1-3]

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