

## การกดทับเส้นประสาท Suprascapular ที่บริเวณไหล่

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## Suprascapular Nerve Entrapment Syndrome: A Literature Review and Case Report in Srinagarind Hospital

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**หลักการและเหตุผล:** ภาวะ suprascapular nerve entrapment syndrome เป็นภาวะที่พบได้ไม่น้อยในโรงพยาบาลศรีนครินทร์ ผู้ป่วยมักจะมาร้องอาการปวดไหล่ หรือร่วมกับมีการทำงานของกล้ามเนื้อในส่วนที่ผิดปกติ การวินิจฉัยต้องอาศัยการตรวจร่างกายที่ละเอียดและถูกต้องแม่นยำจึงจะให้การวินิจฉัยได้ถูกต้องโดยเฉพาะในผู้ป่วยที่ได้รับการวินิจฉัยและรักษาอาการปวดไหล่แต่การรักษาไม่ได้ผลดี จึงควรได้รับการตรวจร่างกายใหม่โดยละเอียดซึ่งอาจพบอาการและอาการแสดงของโรคนี้ได้

**วัตถุประสงค์:** เพื่อทบทวนวรรณกรรมเรื่อง suprascapular nerve entrapment syndrome รวมทั้งให้แพทย์ผู้ดูแลผู้ป่วยที่มีอาการปวดไหล่ได้ทราบถึงความสำคัญในการตรวจร่างกายผู้ป่วยที่มีอาการปวดไหล่อย่างละเอียด

**รูปแบบการศึกษา:** Case report and a literature review.

**สถานที่ทำการศึกษา:** โรงพยาบาลศรีนครินทร์ คณะแพทยศาสตร์ มหาวิทยาลัยขอนแก่น

**สรุป:** ผู้ป่วยที่ร่ายงานได้รับการวินิจฉัยว่าเป็นโรคปวดไหล่และทำการรักษาโดยวิธีการรักษาที่ไม่ได้ผล จึงได้นำมาตรวจรักษาที่โรงพยาบาลและเมื่อได้รับการตรวจร่างกายอย่างละเอียดจึงพบว่า ผู้ป่วยมีอาการของ suprascapular nerve entrapment syndrome และได้รับการรักษาโดยวิธีการผ่าตัดพบว่ามีก้อนไขมันซึ่งเป็นสาเหตุที่พบได้บ่อยไปกดทับเส้นประสาท เมื่อเอาหักไขมันออก อาการของผู้ป่วยดีขึ้น และสามารถกลับไปทำงานหนักได้ในเวลา 6 เดือนหลังจากผ่าตัด ดังนั้นการตรวจร่างกายอย่างละเอียดจะช่วยให้นักถึงและวินิจฉัยโรคนี้ได้ถูกต้อง

**Background:** The suprascapular nerve entrapment syndrome is not a common disease in Srinagarind hospital. The patient with the symptom of the shoulder pain should be re-evaluated thoroughly if the clinical manifestation was not responded to the previous treatment because the clinical sign such as the atrophy of the muscle will be present later. Therefore, the thoroughness of the physical examination is the essential clue for the diagnosis of this condition.

**Objective:** To review the literature and remind the clinician who had the patient with shoulder pain to carefully evaluate the patient especially the patient who had previously failed the medical treatment.

**Design:** Case report and a literature review.

**Setting:** Srinagarind hospital.

**Conclusions:** The patient had the symptom of the right shoulder pain which was not responded to the medical treatment, physiotherapy and the acupuncture treatment. He came to our clinic and we found that he had the syndrome of the right suprascapular nerve entrapment. We carried out the operation and found the lipoma compressed the nerve at the spinoglenoid notch which was one of the common pathologies. After the mass removal, his symptoms had been gradually improved and he gained a good recovery. He can return to the heavy duty within six months after surgery. We would like to emphasize that the careful examinations of the patient with the shoulder pain is the most important way to diagnose the diseases around the shoulder.

## Introduction

The suprascapular nerve entrapment syndrome is not a common disease in Srinagarind hospital. The common symptoms of this syndrome are deep, aching and diffused pain around the shoulder; therefore, it is similar to other conditions of the shoulder pain such as cervical spondylosis, thoracic outlet syndrome, myofascial pain syndrome, etc. It may or may not be presented with the atrophy of the muscles. The most common site of the nerve entrapment occurs at the suprascapular notch and is responsive to operative management. Lipomas and ganglion cysts have been described compressing the inferior branch of the suprascapular nerve and leading to isolated infraspinatus atrophy<sup>1</sup>. However, the patient who has the symptom of shoulder pain should be re-evaluated thoroughly if the clinical condition was not responded to the previous treatment because the clinical sign such as the atrophy of the muscle can be observable later. Therefore, the thoroughness of the physical examination is the essential factor for the diagnosis and treatment of this syndrome.

## Case report

A 24 year old man, visited to our clinic with atrophy of the scapular muscles noticeable for 3 months. He had dull-aching pain around his right shoulder and scapular for four months before the atrophy of the muscles had been observed. His pain was aggravated when he lifted heavy boxes, pushed trolleys or did overhead activities of the shoulder. When he realized the atrophy of the muscles, he went to the general orthopedics hospital in Taiwan and his doctor gave him some medication and the acupuncture therapy. His symptoms were not improved, so he decided to come back to Thailand and visited our clinic. On physical examinations, he had atrophy of the infraspinatus muscle of his right shoulder (figure 1). The power of other muscles of right upper extremity was normal. The deltoid muscle was normal. His pin prick sensation at the right middle deltoid area was decreased. His reflex response was normal. The electrodiagnostic test showed partial denervation to the right infraspinatus muscle. His plain film of the right shoulder appeared to be normal. He had an operative management and the intraoperative finding was the lipoma, size 2 x 2 centimeters in diameter at the spinoglenoid notch impressed on the nerve (figure 2). The mass was removed. During the follow up period, he can return to his heavy activities by three months after the operation. The muscle had been partially recovered as shown in the figure 3. At six months after the operation, there was nearly complete recovery of the atrophic muscle (figure 4).



**Figure 1** The picture shows the atrophy of right infraspinatus muscle preoperatively.



**Figure 2** Shows the intraoperative lipoma compressed the nerve.



**Figure 3** Three months after the operation.



**Figure 4** Six months after the operation, the patient was able to do his heavy duty and the infraspinatus muscle was nearly complete recovery.

## Discussion and the literature review

The suprascapular nerve is a mixed motor and sensory peripheral nerve arising from the superior trunk of the brachial plexus. It supplies motor branch to the supraspinatus and infraspinatus muscles and sends sensory branches to the coracohumeral and coracoacromial ligaments, subacromial bursa and acromioclavicular and glenohumeral joints. The course of this nerve from its origin at the brachial plexus, it travels through the posterior triangle of the neck then laterally, deep to the trapezius muscle, toward the suprascapular notch. At this level, the artery and vein enter the **suprascapular fossa** by passing over the superior transverse scapular ligament, whereas the suprascapular nerve passes beneath this ligament. Within one centimeter of traversing the suprascapular notch, the suprascapular nerve releases its motor branches that typically innervate the supraspinatus muscle by means of two branches. The superior articular branch sends sensory fibers to the coracoclavicular and coracohumeral ligaments, the acromioclavicular joint and the subacromial bursa. This branch typically leaves the main trunk at or just proximal to the superior transverse scapular ligament and continues with the main branch passing beneath this ligament. After passing through the notch, the main portion of the nerve continues inferiorly toward the spinoglenoid notch, giving off a sensory branch to the posterior aspect of the glenohumeral joint capsule. The suprascapular nerve then courses sharply around the scapular spine, passing through a fibro-osseous tunnel formed by the spinoglenoid ligament and the scapular spine and terminating in two,

three, or four motors branches that supply the infraspinatus muscle.

Injuries to the suprascapular nerve can be commonly located at the suprascapular notch, known as the sling effect.<sup>2,16</sup> The nerve is often apposed to the sharp inferior margin of the superior transverse scapular ligament and that the contact was accentuated with depression and retraction or hyperabduction of the shoulder. The spinoglenoid notch is another site where the suprascapular nerve is frequently injured. There are several theories to explain the etiology of this injury<sup>2-3,16</sup>. One hypothesis is that the nerve is entrapped between the spine of the scapular and the medial tendinous margin of the infraspinatus and supraspinatus muscles during extreme abduction of the shoulder with full external rotation<sup>4,16</sup>. Another mechanism that can be the cause of the suprascapular nerve injury is compression by a mass which commonly a ganglion cyst or lipoma. Lipomas and ganglion cysts have been described compressing the inferior branch of the suprascapular nerve and leading to isolated infraspinatus atrophy<sup>5,16</sup>. Other masses that have been described included synovial sarcoma, Ewing sarcoma, chondrosarcoma, metastatic renal-cell carcinoma and a bone cyst<sup>6-7,16</sup>.

How can the suprascapular nerve entrapment syndrome be diagnosed? The typical patient is the ages of twenty and fifty years with involvement of the dominant upper extremity. The onset of the syndrome is often insidious. The patient may recall an acute event that triggered the symptoms. The most common presenting symptom is dull-aching pain, which is located in the posterior aspect of the shoulder and exacerbated by overhead activities. Some patients may present with weakness as the chief symptom with little or no pain. Certain patients may be completely asymptomatic and the atrophy may be detected as an incidental finding<sup>8,16</sup>.

Physical examinations should consist of a thorough shoulder, cervical spine and neurological evaluation to rule out other causes of the symptom. The differential diagnosis includes cervical spine diseases, brachial plexopathy, rotator cuff and intra-articular glenohumeral pathologies. A common finding is atrophy of the scapular muscles, but may be difficult to appreciate for the supraspinatus muscle because of the overlying trapezius muscle. Patients may have tenderness on palpation of the triangle between the clavicle and the scapular spine with a proximal lesion. With a more distal lesion, the tenderness is elicited at the spinoglenoid notch. Weakness may be demonstrated on shoulder abduction or external rotation, depending on the location of the lesion. External rotation strength is a result

of both the infraspinatus and the teres minor muscles, therefore, loss of function of the infraspinatus muscle contribution may be difficult to identify<sup>9-16</sup>.

Diagnostic studies for the suprascapular nerve entrapment syndrome should include the electrodiagnostic studies and the imaging studies. When the clinical presentations suggest the diagnosis, the patient should be evaluated with electrodiagnosis studies to confirm and localize the lesion. Imaging studies are an important part of the evaluation of a suprascapular neuropathy. The studies include plain radiography of the shoulder and the cervical spine, ultrasonography, computed tomography and magnetic resonance imaging. The plain radiography of the shoulder and the cervical spine usually do not demonstrate pathology. Ultrasonography is an excellent and inexpensive method to identify ganglion cysts or other mass lesions about the shoulder<sup>10-16</sup>. But the sensitivity and specificity of an ultrasound examination are highly dependent on the individual performing the study<sup>16</sup>. Computed tomography may be used to evaluate soft tissue masses about the shoulder. However, the best imaging modality for the assessment of soft tissue masses about the shoulder is magnetic resonance imaging which has been demonstrated to be very useful in the diagnosis of ganglion cyst. It is also able to identify changes in the supraspinatus and infraspinatus muscles secondary to denervation<sup>16</sup>. It seems to be advantage, compared with other imaging modalities, of permitting the detection of intra-articular lesions.

How could the syndrome be treated? The initial treatment includes avoidance of activities that result in trauma and irritation to the nerve, typically involve repetitive overhead motion<sup>16</sup>. The rehabilitation program to enhance flexibility of the surrounding muscles of the glenohumeral joint and a gradual strengthening program of the scapular stabilizing muscles and the rotator cuff should be performed. However the results of nonoperative treatment depend on the etiology and location of the nerve lesion<sup>16</sup>. When the nerve compression syndrome is secondary to a mass, the results are not as good as those reported for nerve injury from other causes. The operative procedure used in the treatment and the results vary depending on the etiology and location of the nerve lesion. The results of the operative decompression procedure are associated with a high rate of pain relief and functional improvement. However, resolution of muscle atrophy is less predictable. In our case, the patient had nearly complete recovery from the atrophy of the muscles in six months.

From the present case report, the patient had the symptom of shoulder pain which was not responded to the medical treatment. When we reevaluated his symptoms and signs thoroughly, we found the atrophy of infraspinatus muscles obviously. The diagnostic studies for the syndrome was done and found the compression of the suprascapular nerve. Our preoperative differential diagnosis of the mass such as a lipoma or a ganglion cyst which was the cause of the nerve compression syndrome was finally decided. Anyway, the MRI imaging of the shoulder which should be done to prove the definite diagnosis before the operation was not performed due to the patient's economic problem. We would like to emphasize that the carefully examinations of the patient with the shoulder pain is the most important way to diagnosis the diseases around the shoulder.

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