Case 17510

Eurorad

Lymphatic malformation of the dorsal scapular neurovascular bundle

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Section: Musculoskeletal system
Area of Interest: Anatomy Musculoskeletal soft tissue Neuroradiology peripheral nerve
Procedure: Normal variants
Imaging Technique: MR
Special Focus: Normal variants Case Type: Clinical Cases
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Patient: 35 years, male

Clinical History:

A 35-year-old male presented with chronic right interscapular pain associated with mild scapular dyskinesia. The pain was refractory to conservative treatment and due to a history of an effort-induced thrombosis of his right subclavian vein, an atypical thoracic outlet syndrome with involvement of the dorsal scapular nerve was suspected.

Imaging Findings:

MR imaging of the scapular area revealed a 1 x 1 x 1.5 cm circumscribed mass which demonstrated high-intensity signal in fluid sensitive sequences (STIR) (Fig. 1) (Fig. 2). The mass was located adjacent to the dorsal scapular neurovascular bundle ventrally to the insertion of the minor rhomboid in a space normally occupied by fat. The lesion showed mild but evident contrast enhancement and a fascicular cross-sectional structure in the axial images (Fig. 3). Mild muscle asymmetry was noted with slight atrophy of the right major rhomboid muscle. A certain diagnosis could not be established and an ultrasound-guided lidocaine injection was performed to evaluate possible response or improvement of the symptoms. The injection aggravated the symptoms for a week which prompted the surgical exploration of the area and the excision of the lesion on the suspicion of compression of the dorsal scapular nerve. A 1 cm microcystic lymphatic malformation that surrounded the nerve was excised. The patient’s symptoms remained unchanged.

Discussion:

Interscapular pain is a common clinical issue with a varying aetiology including discogenic pain, facet syndrome, myofascial pain syndrome (MPS) of upper back muscles, and back strain in the dorsal region. The involvement of the dorsal scapular nerve has been debated and an entrapment of this nerve has been postulated [1] as one of the causes. The most common anatomic location of entrapment is considered the middle scalene [2] which has been viewed as an atypical form of thoracic outlet syndrome [3], though its existence is still controversial.

The atypical presentation of dorsal scapular nerve entrapment pertains to the absence of significant neurogenic symptoms in the upper extremity with symptoms and signs mostly located in the interscapular area or the paraspinal area. This spectrum includes varying levels of pain intensity and character along a portion of or its entire pathway of

the nerve and ranges from complete function to complete atrophy of the muscles it innervates[4].

In the majority of cases, imaging investigation of interscapular pain is limited to MR examination of the cervical, thoracic spine or glenohumeral joint. Imaging of the periscapular area is seldom performed and is mostly focused on suspected scapulothoracic bursitis. The oval fat-containing space that is demarcated by the minor rhomboid, the anterior serratus and the caudal part of levator scapula and contains the dorsal scapular vessels is clearly visible when the patient is examined with the arms parallel to the torso (Fig. 4). This space is obliterated when the patient raises their arms above their head, e.g for most CT examinations. The presence of a mass lesion in this area can be misleading in a patient with interscapular symptoms.

The lesion which has not been described previously in the radiologic or anatomic literature is a lymphatic malformation adjacent to the dorsal scapular neurovascular bundle with a rather high prevalence and varying size in this particular anatomic location to the authors' experience.

Take-Home Message

Radiologists should be aware of the dorsal scapular lymphangioma and should dismiss it as an incidental finding with no clinical significance, especially in patients that undergo imaging for non-specific chronic unresolving periscapular or interscapular symptoms. The size of the lesion can vary and can mislead the treating physician into an unnecessary and risky surgery that could damage the dorsal scapular nerve or the closely coursing spinal accessory nerve.

Written informed patient consent for publication has been obtained.

Differential Diagnosis List: Lymphatic malformation of the dorsal scapular neurovascular bundle, Hibernoma , Scapulothoracic bursitis , Neuroma/Nerve sheath tumour

Final Diagnosis: Lymphatic malformation of the dorsal scapular neurovascular bundle

References:

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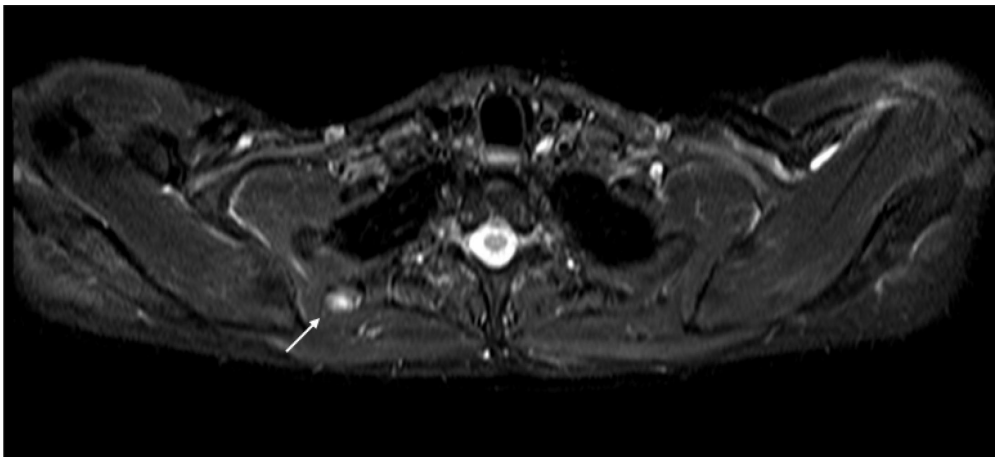
Williams, A. A., & Smith, H. F. (2020). Anatomical entrapment of the dorsal scapular and long thoracic nerves, secondary to brachial plexus piercing variation. Anatomical science international, 95(1), 67–75.PMID: 31338726.
Chen, D., Gu, Y., Lao, J., & Chen, L. (1995). Dorsal scapular nerve compression. Atypical thoracic outlet syndrome. Chinese medical journal, 108(8), 582–585. PMID: 7587488.
Muir B. (2017). Dorsal scapular nerve neuropathy: a narrative review of the literature. The Journal of the Canadian Chiropractic Association, 61(2), 128–144. PMID: 28928496

Figure 1

a

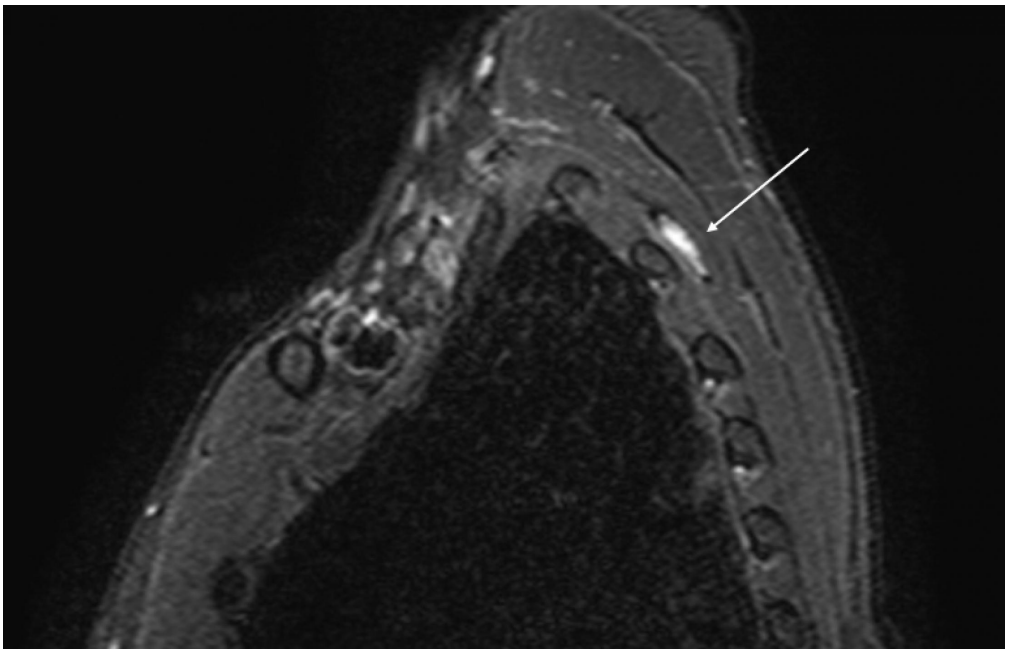


Description: Axial STIR image shows a well-defined oval mass of high signal intensity (arrow) in the space between the minor rhomboid muscle and the most posterior part of the serratus anterior muscle

Origin: Research Unit of Radiology - 2nd Department of Radiology, National and Kapodistrian University of Athens, Athens, Greece

Figure 2

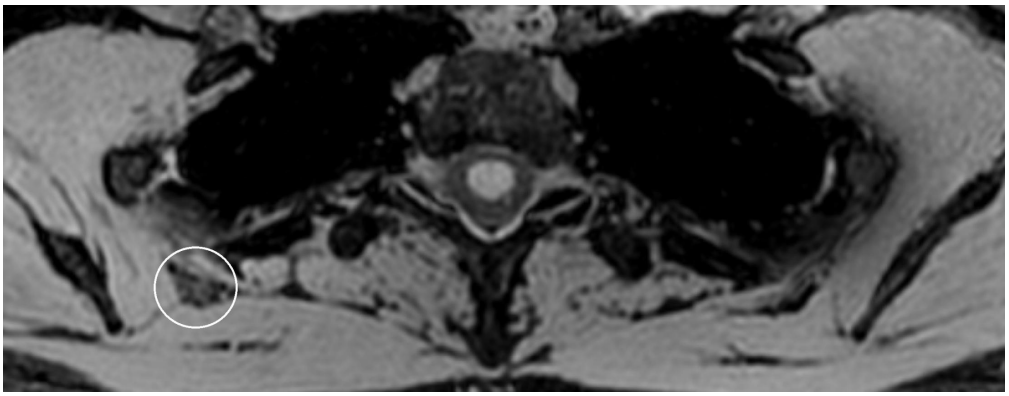
a



Description: Sagittal STIR image demonstrating the somewhat flattened lesion (arrow) in between the 2nd rib and the minor rhomboid muscle **Origin:** Research Unit of Radiology - 2nd Department of Radiology, National and Kapodistrian University of Athens, Athens, Greece

Figure 3

a



Description: Axial 3D water selective T1 image (WATS 3D) before (3a) and after (3b) Gadolinium administration shows mild enhancement of the lesion which also clearly demonstrates a fascicular/tubular cross-sectional texture. Notice the contralateral corresponding space that is occupied by suppressed fat tissue **Origin:** Research Unit of Radiology - 2nd Department of Radiology, National and Kapodistrian University of Athens, Athens, Greece

b

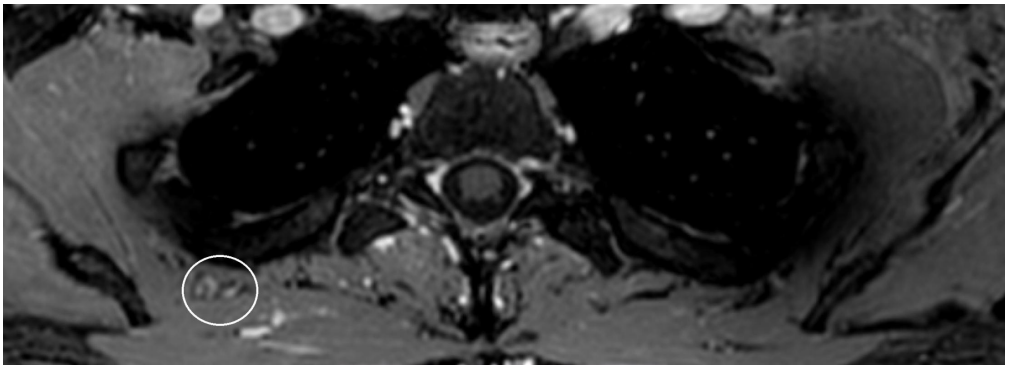


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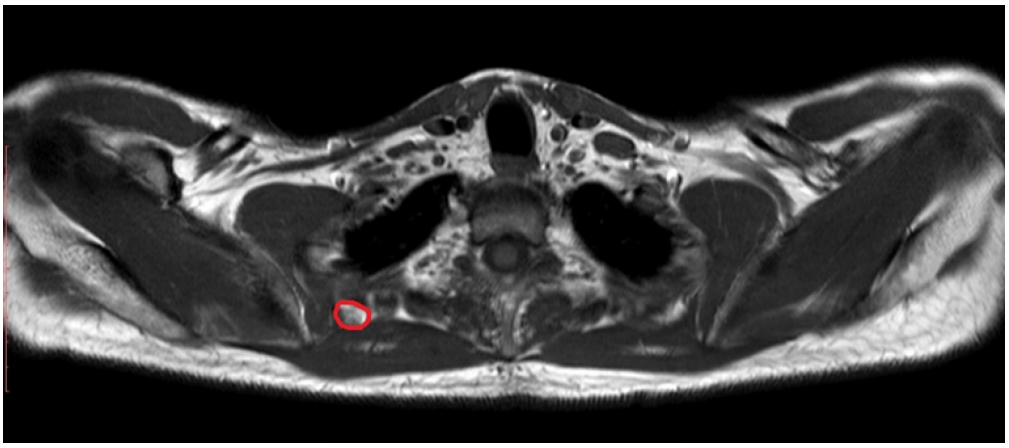
Figure 4

a



Description: The oval space that is annotated by the circle and is demarcated by the rhomboid minor, the serratus anterior and the insertion of the levator scapulae, is normally occupied by fat and contains the dorsal scapular neurovascular bundle. This space is obliterated when the patient raises their arms over their head **Origin:** Research Unit of Radiology - 2nd Department of Radiology, National and Kapodistrian University of Athens, Athens, Greece