

# IOP - Images

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## Case

Sixty-eight year-old female who, at self palpation, finds a right infra-scapular tumoral lesion associated with regional pain and scapular bumping while performing movement.

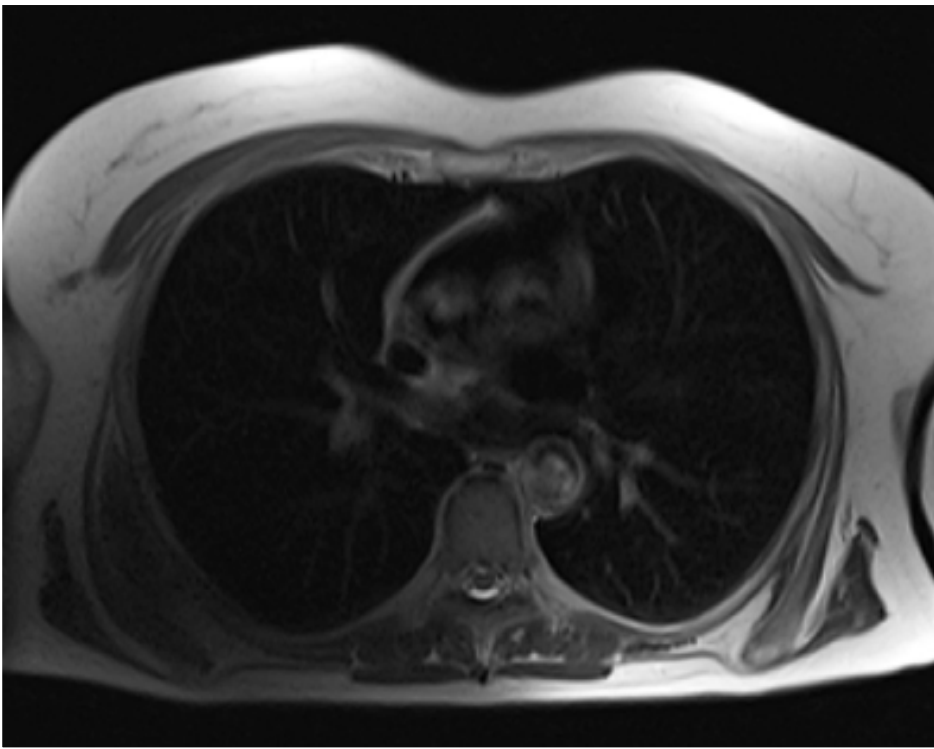
## Findings and interpretation of imaging studies


We got ultrasound and MRI images. Ultrasound showed a solid lesion with fascicular or laminar pattern, with alternating hypoechoic and hyperechoic lines parallel to the right thoracic wall. The contra-lateral side is shown for comparison (Figure 1).




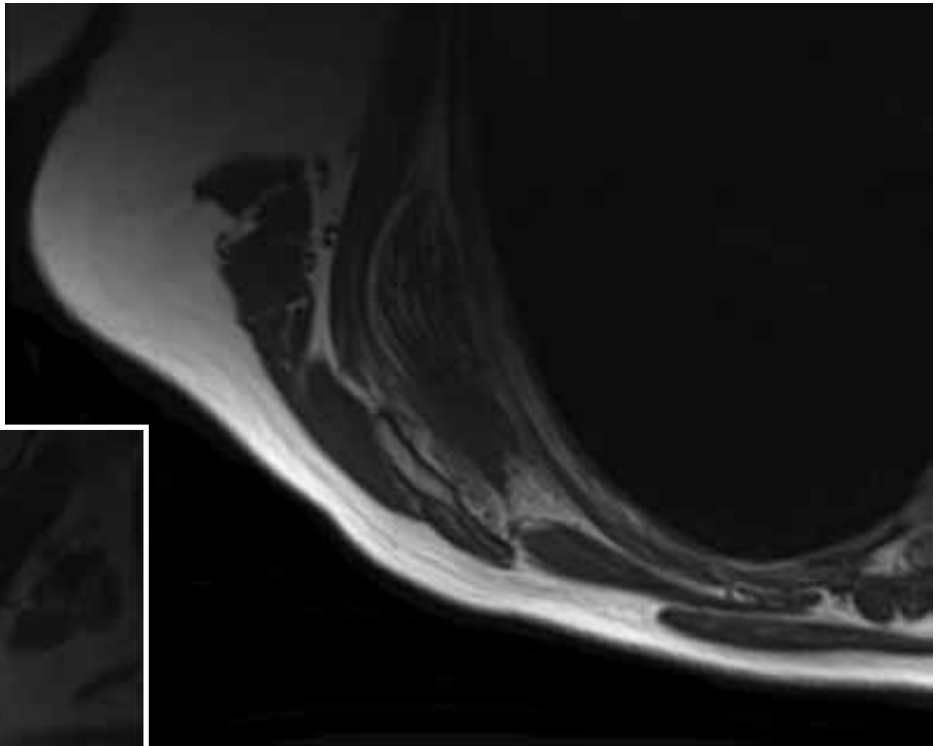
▲ **Figure 1.** Transverse ultrasound exam. There is asymmetry on the muscle plane for greater right thick. Muscle tissue ultrasound heterogeneity can be recognized.


First, we got MRI thorax images for comparison (Figure 2). Then, we focused on the right infra-scapular region that coincided with the palpable tumoral lesion. We visualized a semi-lunar bulge with a fat-fibrous alternating pattern (Figures 3 and 4).




**Figure 2.** Thorax MRI, T2 transverse section (1500/80). Asymmetry in infra-scapular soft tissues with a solid lesion on the right dorsal wall stands out.


**Figure 3.** MRI, T1 transverse section (468/13). A bulge of the thoracic wall with signal similar to that of skeletal muscle can be visualized. This location, between the inferior apex of the scapula and the thoracic cage is the classical location of this condition. Note that, within, it contains small fat foci (high signal)




**Figure 4.** MRI, T2 oblique sagittal section (3320/101). In this sequence, the lesion also shows a fascicular pattern with alternating fibrous and fat tissues. Note the relationship that it shows with the inferior edge of the scapula.

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SECOND PART

## Diagnosis

Elastofibroma dorsi.

## Discussion

The elastofibroma dorsi is considered to be a soft tissue pseudo-tumoral lesion of degenerative nature that results from excessive production of collagen and especially of abnormal elastic fibers. Although its etiopathogenesis is unknown, degeneration of collagen fibers has been suggested as a possible cause. Such degeneration can follow microtrauma on the scapulothoracic joint that leads to hyper-production of elastic fibers. Consequently, this lesion is considered to be reactive, not a true neoplasia. Vascular failure and familiar predisposition have also been set out as possible etiologic factors. Along these lines, one third of the patients show familiar background, what suggest a genetic origin rather than a traumatic one.

It is most frequently located ahead the scapular bone, on the ribs plane between the sixth and the eighth dorsal rib arches, deeper than the regional muscles, mainly the anterior serratus, the latissimus dorsi and the scapular elevator muscles. Its size usually oscillates between 2 and 15 cm.

Although in 99% of the cases this lesion is located between the thoracic wall and the lower scapular edge, there are reports on elastofibroma dorsi somewhere else (olecranon, foot, hand, greater trochanter, and ischial tuberosity, among others). When infra-scapular, it is rather located on the right; between 10% and 66% of the cases, however, the lesion is bilateral or synchronic in other locations.

It preferably affects women, with ratios that oscillate between 5 and 13:1. In most cases, the patient is older than 50, (although there are reports on younger patients).

It is slow-growing lesion; therefore, it can go asymptomatic many years (more than 50% of them are asymptomatic). In general, greater elastofibromas can cause medical symptoms; they sometimes show with mild pain associated with scapular bumping at movement. Occasionally the pain can radiate to the shoulder and lead to a mistaken medical diagnosis of rotator cuff injury or subacromial bursitis. At physical examination, elastofibroma dorsi usually shows as a well circumscribed tumor, not mobile, with no adherences to the overlying skin but to muscle and subfascial tissues.

In imaging studies, this lesion is usually unique in its looks and with high histopathological correlation. In ultrasound imaging it is seen as an infra-scapular semi-lunar bulge between the extrinsic back muscles and the rib plane. It looks striated with several layers, with alternating hypoechoic (fat tissue) and echogenic (fibroelastic tissue) bands, with little or no flow at color Doppler ultrasound. It is better visualized in the patient in prone position with her or his ipsi-lateral upper limb abducted.

In CT scan imaging, it shows as a soft tissues bulge with poorly defined edges, heterogeneous, with density similar to that of skeletal muscle alternating with fusiform-shaped bands of fat attenuation. It can rarely cause rib erosion, but no destruction.

MRI images are similar to those of CT scan. In both T1 and T2 images the signal intensity is similar to that of the muscle, interweaving with fat tissue hyper-intense bands. It can enhance heterogeneously after i.v. gadolinium administration.

Histological assessment shows areas of fibrous dense connective tissue interweaved with fat tissue areas.

Possible differential diagnoses based on the affected area and the characteristics of the MRI and CT scan imaging are limited and include lesions of low cellular density and abundant collagen tissue: extraabdominal desmoid tumor, neurofibroma, keloid scar, fibrosarcoma, malignant fibrous histiocytoma, and metastasis.

Biopsy is left for suspicious cases in which imaging studies do not reveal the characteristic pattern.

Surgical treatment is usually curative, although most authors recommend removal only in symptomatic cases or when medical-radiological findings are insufficient to confirm the diagnosis of elastofibroma dorsi. Recurrence is possible if removal was not complete. There are reports on approximate recurrence rates of 7% at post-operative years 2-17.