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Imaging of Elastofibroma Dorsi: About 13 Cases

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ABSTRACT

Elastofibroma dorsi is a rare benign fibroproliferative pseudotumor most often located beneath the inferior angle of the scapula. We report a series of 13 cases diagnosed in our radiology department, highlighting the clinical and imaging features across multiple modalities. The mean patient age was 48 years (range: 38–68), with a clear female predominance (12 women, 1 man). The lesion was bilateral in 7 cases and unilateral in 6 cases. Clinically, patients presented mainly with a palpable subscapular mass, with pain reported in four cases. Imaging findings were characteristic: ultrasound revealed ill-defined iso-echoic masses with alternating hyperechoic and hypoechoic striations; CT demonstrated well-defined, fusiform, non-encapsulated masses isodense to muscle, interspersed with fatty streaks; MRI showed the typical dual composition of fibrous (hypointense on T1/T2) and fatty (hyperintense on T1) tissue, producing the pathognomonic checkerboard pattern. Recognition of these features is crucial to establish a confident diagnosis and to avoid unnecessary invasive investigations. Surgical excision is reserved for symptomatic cases, while asymptomatic patients may be managed conservatively.

Keywords

Elastofibroma dorsi, Pseudotumor, Subscapular mass, MRI, CT, Ultrasound.

Introduction

Elastofibroma dorsi is a rare benign chest wall tumor, first described by Järvi and Saxén in 1961. It is a fibrous and elastic pseudotumor that typically develops in the subscapular space, between the posterior thoracic wall and the scapula. Its prevalence is estimated at approximately 2%, with a female predominance and occurrence usually after the age of 50. The diagnosis relies essentially on imaging, thereby avoiding unnecessary biopsies or surgical procedures.

Materials and Methods

We collected 13 cases of elastofibroma dorsi in 2025 within our radiology department. Sex distribution: 12 women and 1 man. Mean age: 48 years (range: 38–68 years). Location: bilateral in 7 cases; unilateral in 6 cases. Clinical presentation: pain in 4 cases; palpable mass in 13 cases (5 prescapular, 8 infrascapular). Imaging investigations performed: CT alone: 8 patients, Ultrasound + CT: 4 patients, MRI: 4 patients, Chest radiograph: 1 patient.

Results

Radiography: In one case, chest radiography revealed a bilateral, ill-defined soft-tissue mass located beneath the inferior angles of the scapulae.

Ultrasound: In the four cases explored with ultrasound, the lesion appeared as an ill-defined, iso-echoic mass adherent to the posterior thoracic wall. It demonstrated alternating hyperechoic and hypoechoic striations oriented parallel to the thoracic axis.

Computed Tomography (CT): CT consistently demonstrated a well-defined, fusiform, non-encapsulated mass. The lesion was isodense to skeletal muscle with interspersed fatty streaks arranged parallel to the thoracic wall. No contrast enhancement was observed after intravenous injection, and there was no evidence of bone involvement. Magnetic Resonance Imaging (MRI): MRI revealed a dual-tissue composition: Fibrous component: hypointense on both T1- and T2-weighted sequences, similar to muscle. Fatty component: hyperintense on T1-weighted and intermediate on T2-weighted sequences.

Figure 1: Clinical photograph showing a subtle, ill-defined swelling in the right subscapular region, consistent with elastofibroma dorsi.

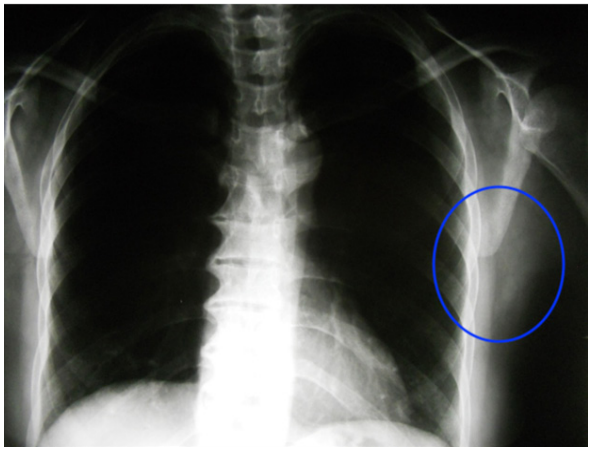

Figure 2: In the left infrascapular region (blue circle), there is a poorly defined, soft-tissue density mass, appearing fusiform and situated between the chest wall and scapula. The lesion is of soft-tissue attenuation and blends with adjacent musculature, suggestive of elastofibroma dorsi.

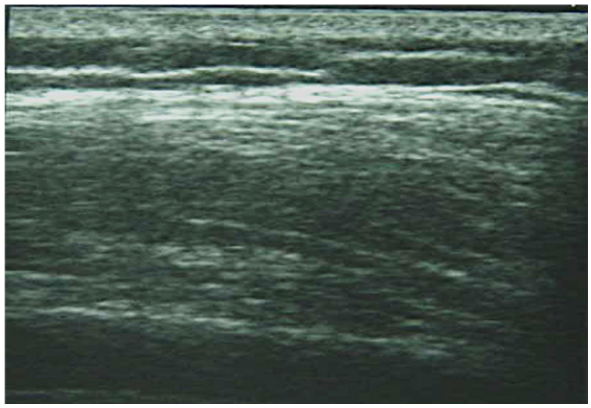

Figure 3: Ultrasound of the posterior thoracic wall demonstrates a poorly circumscribed, iso-echoic soft tissue mass adjacent to the chest wall, with internal parallel echogenic and hypoechoic striations.

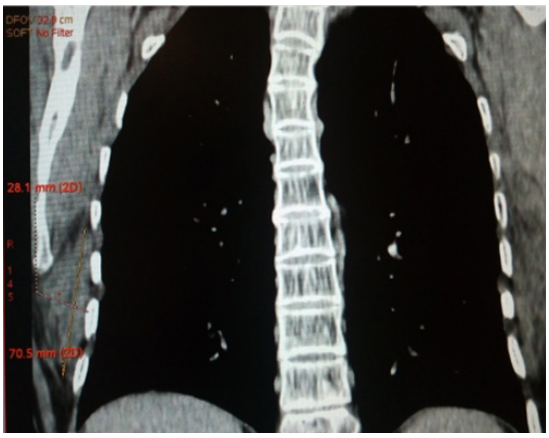

Figure 4a: Coronal chest CT image demonstrating a poorly defined, soft-tissue density lesion consistent with a right elastofibroma dorsi, located beneath the inferior angle of the scapula and adjacent to the thoracic wall.

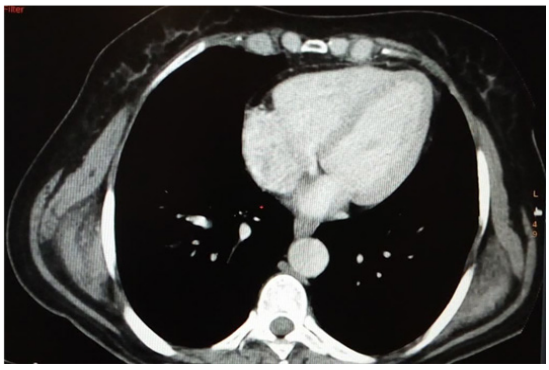

Figure 4b: Axial chest CT image showing bilateral posterior thoracic wall lesion, appearing iso-dense to skeletal muscle with interspersed fat streaks, compatible with elastofibroma dorsi.

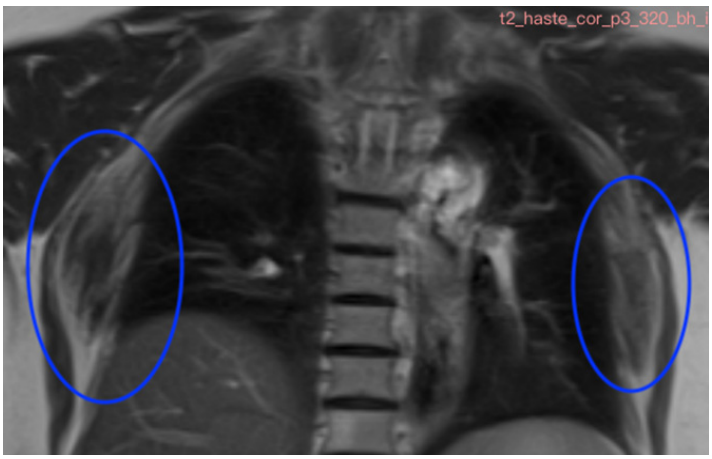

Figure 5: Coronal T2-weighted MRI of the thoracic region showing bilateral, poorly circumscribed, lenticular soft-tissue masses (blue circles) located in the infrascapular regions, interposed between the chest wall and the lower angles of the scapulae. The lesions are iso- to slightly hyperintense relative to adjacent skeletal muscle and display interspersed linear hypointense streaks corresponding to fibrous tissue. These imaging features are consistent with bilateral elastofibroma dorsi.

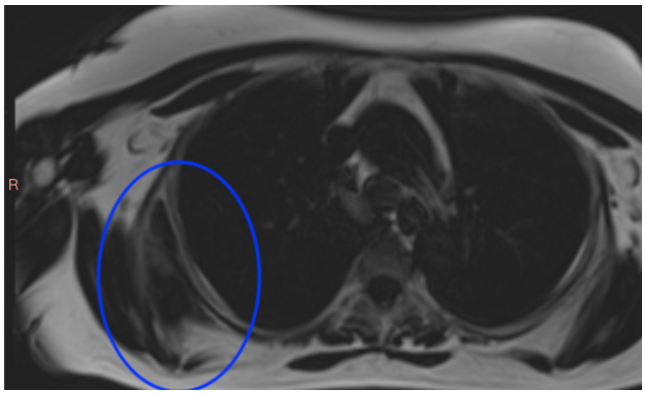

Figure 5b: Axial T2-weighted MRI image of the thorax demonstrating a poorly circumscribed, fusiform soft-tissue mass located in the right posterior chest wall, deep to the scapula (blue circle). The lesion appears isointense to skeletal muscle with interspersed linear hyperintense and hypointense striations arranged parallel to the thoracic wall. The mass is non-encapsulated and abuts the adjacent musculature without evidence of invasion into the ribs or pleural cavity.

Discussion

Elastofibroma dorsi (ED) is a rare benign soft tissue tumor, located in 99% of cases in the inferior subscapular region, between the serratus anterior and latissimus dorsi muscles.

First described by Jarvi and Saxén in 1961 histopathological examination of Elastofibroma Dorsi shows a poorly circumscribed proliferation of randomly oriented fibrous fascicles with interspersed adipose islands on H&E, and disorganized elastic and collagen fibers on elastin and trichrome stains, without necrosis, atypia, or increased mitotic activity [1].

Elastofibroma dorsi (ED) represents about 2% of primary chest wall tumors in adults, predominantly in women. Imaging studies show a prevalence of about 2% in asymptomatic adults over 60, but markedly lower in symptomatic cases, with reported rates of only 0.08% and 1% in large institutional series.

The pathophysiological hypotheses remain debated. In addition to the mechanical role, some authors have suggested a local vascular insufficiency leading to elastotic degeneration. Others emphasize a familial predisposition, reported in nearly 30% of cases, suggesting a hereditary origin, as observed in the large series by Nagamine et al [2]. Chronic microtrauma related to scapular movements against the thoracic wall may play a contributory role, although this theory alone does not account for the marked female predominance. Finally, recent studies suggest a monoclonal neoplastic process related to genomic instability, challenging the concept of a purely reactive theory [3]. Rare occurrences in the ischial tuberosities, hand, foot, orbit, mediastinum, intraspinal spaces, greater omentum, and stomach have also been reported [4].

The typical presentation of elastofibroma dorsi consists of a subscapular mass, often accompanied by a long-standing history of swelling, discomfort, scapular snapping, and, in some cases, pain.

Magnetic resonance imaging (MRI) is considered the imaging modality of choice for diagnosing elastofibroma dorsi. It typically demonstrates a well-defined, moderately inhomogeneous soft-tissue mass without surrounding edema. On T1-weighted images, the lesion is usually isointense to skeletal muscle, which partly explains why it may be overlooked at first assessment. Both T1- and T2-weighted sequences consistently reveal alternating linear or curvilinear hyperintense streaks corresponding to fat interspersed with hypointense fibrous tissue, producing the pathognomonic “checkerboard” pattern. STIR (short TI inversion recovery) sequences further help in tissue characterization by suppressing the fat signal, allowing clearer delineation of fibrous components. Following gadolinium administration, MRI may show heterogeneous, subtle enhancement, but this is usually insufficient to mimic a sarcoma when correlated with other features. Overall, MRI provides the most reliable non-invasive diagnosis and can obviate the need for biopsy in typical clinical settings [5].

Computed tomography (CT) may demonstrate a homogeneous soft-tissue mass with attenuation values similar to skeletal muscle. The fatty streaks within the lesion are less well visualized because of CT’s limited contrast resolution, and the margins of the lesion often blend with adjacent musculature. Consequently, CT is generally less sensitive than MRI for detecting the characteristic internal structure of elastofibroma. However, CT can be helpful in cases where MRI is contraindicated or unavailable, and it reliably shows the size, extent, and bilateral occurrence of the lesions [6].

Ultrasound, a more accessible and cost-effective tool, has proven to be a useful adjunct in the diagnostic workup of elastofibroma. The most frequent sonographic appearance is an inhomogeneous fasciculated pattern, reflecting parallel echogenic and hypoechoic striations corresponding to fatty and fibrous tissue, respectively. Several authors have emphasized the role of ultrasound in raising suspicion for elastofibroma, particularly in elderly patients with bilateral subscapular soft-tissue masses. Color Doppler usually shows absent or minimal vascularity, supporting the benign nature of the lesion [7].

Plain radiographs are generally unremarkable but may occasionally reveal scapular elevation or a non-calcified subscapular mass [8]. Taken together, the integration of these modalities—ultrasound for initial screening, CT for anatomical definition, and MRI for definitive characterization—provides a comprehensive diagnostic pathway.

Biopsy is indicated only in cases of clinical or radiologic atypia, in order to exclude sarcoma or aggressive fibromatosis. Treatment is surgical and indicated only in cases of disabling symptoms or when there is diagnostic uncertainty. For bilateral or asymptomatic forms, simple surveillance is recommended in order to avoid unnecessary interventions [5].

Conclusion

Elastofibroma dorsi is a benign pseudotumor typically located beneath the inferior angle of the scapula. Its diagnosis relies on

imaging (CT and MRI), thereby avoiding the need for biopsy. Recognition of its characteristic radiologic appearance is crucial to prevent unnecessary invasive diagnostic procedures. The prognosis is excellent, with a very low recurrence rate and no aggressive behavior.

References

1. Jarvi O, Saxen E. Elastofibroma dorse. Acta Pathol Microbiol Scand Suppl. 1961; 51: 83-84.
2. Nagamine N, Nohara Y, Ito E. et al. Elastofibroma in Okinawa. A clinicopathologic study of 170 cases. Cancer. 1982; 50: 1794-1805.
3. Schafmayer C, Kahlke V, Leuschner I. et al. Elastofibroma dorsi as differential diagnosis in tumors of the thoracic wall. Ann Thorac Surg. 2006; 82: 1501-1504.
4. Go PH, Meadows MC, B deLeon EM. et al. Elastofibroma dorsi: A soft tissue masquerade. Int J Shoulder Surg. 2010; 4: 97-101.
5. Battaglia M, Vanel D, Pollastri P. et al. Imaging patterns in elastofibroma dorsi. Eur J Radiol. 2009; 72: 16-21.
6. Malghem J, Baudrez V, Lecouvet F. et al. Imaging study findings in elastofibroma dorsi. Joint Bone Spine. 2004; 71: 536-541.
7. Ozpolat B, Yazkan R, Yilmazer D. et al. Elastofibroma dorsi: report of a case with diagnostic features. J Ultrasound Med. 2008; 27: 287-291.
8. Nishio J, Isayama T, Iwasaki H. et al. Elastofibroma dorsi: diagnostic and therapeutic algorithm. J Shoulder Elbow Surg. 2012; 21: 77-81.