ELASTOFIBROMA DORSI : A CHEST WALL PSEUDOTUMOR. COMPUTED TOMOGRAPHY AND MAGNETIC RESONANCE IMAGING DIAGNOSIS

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"Elastofibroma dorsi" is a benign soft tissue mass usually arising between the chest wall and the inferior and medial aspects of the scapula. This lesion is not a true neoplasm but rather a reactive hyperplasia of elastic fibers. We present a case report of a woman with a subscapular mass, which was studied by computed tomography and magnetic resonance imaging. These are the methods of choice to study a soft tissue mass in order to define the inner structures and limits Computed tomography is helpful to guide a percutaneous biopsy, avoiding lesions to adjacent structures. Biopsy is recommended even when the imaging presentation seems typical of elastofibroma. The pathologic findings are diagnostic. No treatment is necessary in the asymptomatic patient. The treatment of choice for a symptomatic elastofibroma is local excison. There have been no reported cases of malignant transformation.

Keywords : elastofibroma ; CT-scan ; magnetic resonance imaging ; chest wall tumor.
Mots-clés : élastofibrome ; tomodensitométrie ; imagerie par résonance magnétique ; tumeur de la paroi thoracique.

INTRODUCTION

Elastofibroma is a slowly growing benign tumor which contains a large amount of hypertrophic elastic fibers ; it usually presents as a periscapular mass in elderly patients. First described by Järvi and Saxén in 1961 (1), it was thought to result from mechanical friction between the scapula and the chest wall. It is not uncommon, and it was found in 24% of women and 11% of men in one autopsy series (2). We used computed tomography (CT) and magnetic resonance imaging (MRI) to study a subscapular mass in a female patient. By percutaneous biopsy, the diagnosis of elastofibroma dorsi was confirmed, and the mass was completely removed by surgical excision.

CASE REPORT

A 58-year-old woman with a past medical history of carcinoma of the cervix (Ib), noticed a painless, nontender, mass in the left infrascapular region one year before admission. Laboratory studies were normal.

CT scan of the chest wall showed an ill-defined mass located in the subcapular region, with tissue density approximately equal to that of the adjacent soft tissue and with scattered areas of decreased density (fig. 1). Spin-echo MR images showed a relatively well-defined, nonhomogeneous lesion. On T1-weighted images the mass had the same signal intensity as skeletal muscle, interspersed with curvilinear areas of high-signal intensity equivalent to subcutaneous fat (fig. 2). Tru-cut biopsy of the mass showed that it was composed of hyalinized collagen with scattered fibroblasts and entrapped islands of mature adipose tissue. Enlarged, hypereosinophilic, refractile elastic fibrils were present

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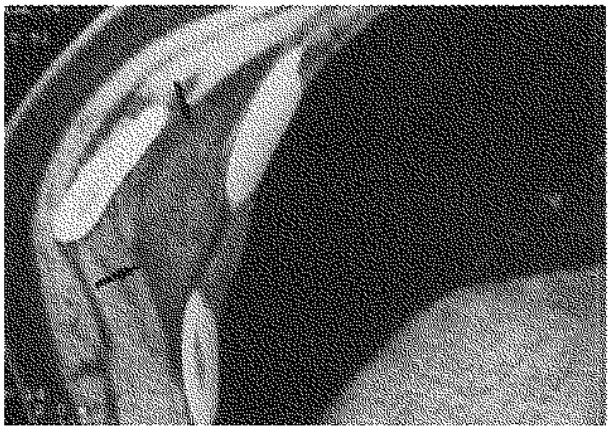

Fig. 1.

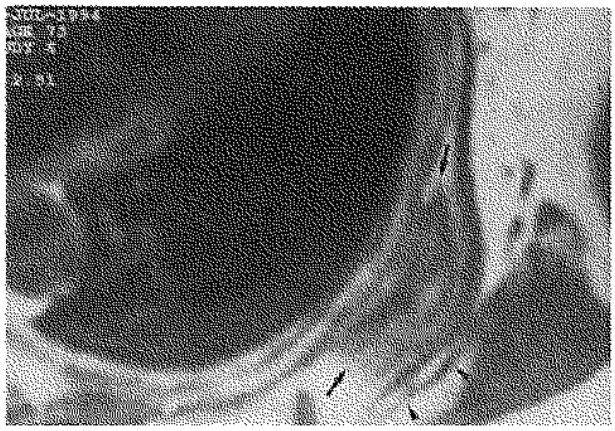

Fig. 2.

Fig. 1. — Axial CT scan shows a large subscapular mass (arrows). Note the subtle areas of decreased density within the mass. The lesion can not be separated from the intercostal muscles.
Fig. 2. — Axial T1-weighted (350/15) spin-echo MR image at same level as fig. 1 shows a nonhomogenous mass (arrows) between the chest wall and scapula (arrowheads). The mass has a signal intensity corresponding to the surrounding skeletal muscle. Within the mass there are linear and curvilinear areas with increased signal intensity the same as that of subcutaneous fat.

in a heterogeneous distribution (fig. 3). The patient underwent surgical excision of the tumor by sharp dissection of the attachments to the periosteum of the ribs and overlying muscle. In this case, extended resection of the margins was not necessary to prevent recurrence.

DISCUSSION

Elastofibromas were described by Järvi and Saxén (1) in 1961. Subsequently no more than 300 cases have been reported in the literature, mainly as individual case reports. Elastofibroma dorsi is generally considered a fibroblastic pseudotumor without malignant potential. No local recurrences have been reported after complete resection. It probably originates from periosteal fibroblasts with impaired elastic fibrillogenesis. It usually arises in the subscapular region. Bilateral lesions are common and they may occur asynchronously. Elastofibromas at other sites such as the subolecranon area, the deltoid muscle, the ischial tuberosity, the greater trochanter, the intraspinal space, the greater omentum, the orbital area, and the foot have been described but are uncommon (3). Lesions typically occur on the back and are thought to be related to repeated mechanical friction between the chest wall and the tip of the scapula. Recent studies indicated that active synthesis of elastic fibrils occurs within elastofibromas and that elastic fibrillogenesis is an abnormal rather than a degenerative phenomenon. Microscopically, collagen bundles alternate with numerous acidophilic, refractive cylinders often containing a central dense core, both of which stain strongly with elastic stains. Ultrastructurally, the cylinders are made up of immature amorphous elastic tissue, whereas the central core contains mature fibers.

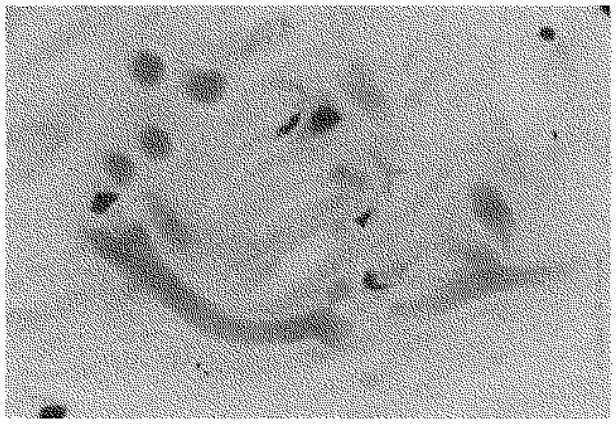

Fig. 3. — Histological section showing elastofibrom fiber embedded in a dense collagenous matrix (× 40).

Elastofibromas are usually found in the lower subscapular space deep to the rhomboid and latissimus dorsi muscles, and are firmly fixed to the posterior thoracic cage in the region of the sixth to the eighth rib in 99% of reported cases. The age at the time of diagnosis ranges from 35 to 94 years (3). More than half the patients are asymptomatic ; the most common symptom is stiffness, whereas pain is relatively uncommon and is the presenting symptom in only 10%. There is a female predominance estimated to be 2 : 1 (2). Lesions may be as large as 20 cm and may manifest as a soft-tissue mass ; however, elastofibroma may also produce a thickened and indurated area of the thoracic fascia or a "streak in the fascia" detected on histologic examination. Lesions may be stable or may grow slowly over many years. Surgery is considered curative ; recurrence is rare and probably due to incomplete excision.

On computed tomography (CT), an elastofibroma is a poorly defined nonhomogeneous soft-tissue mass approximately the same density as that of skeletal muscle. It contains linear low-density streaks (4). On magnetic resonance imaging (MRI), spin-echo sequence T1-weighted, the lesion is a lenticular well-defined mass with an intermediate signal intensity approximately equal to that of skeletal muscle, with interlaced areas with a signal intensity similar to that of fat. These areas of increased signal intensity presumably correspond to adipose tissue within the lesion, whereas the areas of relatively decreased signal intensity correspond to areas of dense fibrous connective tissue, which predominate (5). On T2-weighted imaging, there is no further increase in signal intensity (6).

The differential diagnosis in patients with a subscapular tumor includes liposarcoma, fibromatosis and malignant fibrous histiocytoma. The radiological discrimination between an elastofibroma and other mesenchymal malignancies is difficult and needle biopsy is recommended. The differential diagnosis of lesions that have increased signal intensity on T1-weighted images is limited, and includes lipoma, liposarcoma, hemangioma, hematoma and intralesional hemorrhage.

The imaging features of an elastofibroma are different from those of most soft-tissue tumors, reflecting entrapped fat within a predominantly fibrous mass. Although these features are not pathognomonic, the presence of a subscapular lesion in an older patient suggests a presumptive diagnosis of elastofibroma.

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SAMENVATTING

R. VALLS, P. MELLONI, A. DARNELL, R. SANCHEZ-FLO. Elastofibroma dorsi : een pseudotumor van de thoraxwand. Diagnose met CT-scan en MNR.

De elastofibroma dorsi is een benigne gezwel dat ontstaat tussen het ribbenrooster en de infero-mediale rand van de scapula. Het letsel is niet een echte neoplasie maar eerder een reactieve hyperplasie van elastische vezels. De auteurs beschrijven het geval van een vrouw met een subscapulaire massa die met CT-scan en NMR onderzocht werd. Deze twee technieken genieten voorkeur voor de studie van een gezwel van de weke delen om de interne structuur en de grenzen van het gezwel te bepalen. De CT-scan is nuttig om een percutaan biopt te leiden, zonder letsel van de aanpalende structuren.

Het verdient aanbeveling een biopt uit te voeren zelfs wanneer het beeld typisch lijkt voor een elasto-

fibroma. De patholoog-anatomische bevindingen zijn beslissend voor de diagnose. Bij asymptomatische patiënten is er geen behandeling aangewezen. De excisie geniet de voorkeur voor een symptomatisch elastofibroma. Er werden geen secundaire maligne evoluties gerapporteerd.

RÉSUMÉ

R. VALLS, P. MELLONI, A. DARNELL, R. SANCHEZ-FLO. L'élastofibrome du dos : pseudo tumeur de la cage thoracique. Diagnostic par tomodensitométrie et IRM.

L'élastofibrome du dos est une tumeur bénigne des tissue mous qui naît habituellement entre la paroi thoracique et la face postérieure de l'omoplate. Il ne s'agit pas d'une vraie néoplasie mais plutôt d'une hyperplasie réactionnelle des fibres élastiques. Les auteurs rapportent le cas d'une patiente qui présentait une telle lésion, étudiée par tomodensitométrie et IRM, méthodes de choix pour étudier les structures internes et les limites d'une telle lésion. La tomodensitométrie peut aussi aider à guider une biopsie percutanée en évitant de léser les structures adjacentes. La biopsie est recommandée même si l'aspect en imagerie paraît typique d'un élastofibrome. L'aspect histologique permet d'affirmer le diagnostic. Aucun traitement ne s'impose chez un patient asymptomatique. Le traitement de choix d'une lésion symptomatique est l'excision locale. On n'a rapporté aucun cas de transformation maligne.