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Original Article

Two elastofibroma dorsi cases report: a rare but easily treatable disease

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Abstract: Elastofibroma Dorsi (ED) is a rare type of benign tumor-like soft tissue mass. It is usually located in the lower scapular region and attached firmly to the thoracic cage, deep in the latissimus dorsi and serratus anterior. Most lesions of ED are asymptomatic. A few patients have pain at the lesion site, while this tumor grows slowly in some patients. ED can be detected by CT or MRI. ED can be easily neglected for treatment, partially because it is an uncommon reactive lesion. Here, we report two cases of elastofibroma dorsi with clinical symptoms. Case one is a 61-year-old female. She came to our outpatient department complaining about pain and discomfort on her left back with a mass for 3 years. CT examination showed a poorly defined soft tissue mass on the left back with attenuation similar to skeletal muscle. However, no definitive diagnosis or biopsy was made. The mass was surgically removed and histopathologic examination revealed elastofibroma. The second case is also a female with elastofibroma dorsi on her right back, with no evidence of recurrence during 1-year follow-up. The mass was excised to relieve the psychological stress of the patient and improve her quality of life.

Keywords: Elastofibroma dorsi, surgical excision, pathology

Introduction

Elastofibroma Dorsi (ED) is a rare type of benign soft tissue tumor that is usually located deep in the subscapular region, first reported by Järvi and Saxen in 1961, with an incidence of 0.23/100 [1]. Elastofibroma was very infrequent in China. ED typically occurs in female patients over the age of 55, with a female to male incidence rate of 8:1 [2]. Unilateral incidence was significantly more than bilateral [3-5]. Most of the patients have no obvious clinical symptoms, while a few patients have pain and activity limitation at the lesion site. Some ED lesions are mobile between the muscle and the chest wall with resultant difficulty in detection by palpation.

ED usually demonstrates an oblate soft tissue mass, mainly skeletal muscle-like density, with internal strip fat density with an ill-defined boundary on CT images. In spite of the mass effect and ill-defined border, the ED lesion is not invasive or destructive to surrounding tissue. Grossly Elastofibroma is a yellowish-white ovoid mass, without a capsule and its boundary is unclear. Histopathologic examination shows hyperplasia of elastic fibers interspersed with adipose tissue.

Case presentation

Here, we report two cases of mobile Elastofibroma dorsi (**Table 1**). Relevant literatures were reviewed accordingly. This study has been approved by the Ethics Committee of Jinan Central Hospital with patients' informed consent (NO. 20190521).

One of the cases was a rare mobile elastofibroma dorsi. A 61-year-old female patient complained about pain and discomfort on her left back for 3 months associated with a mass. The patient had past medical history of hyperten-

Table 1. Case material

Case	Gender	Age (yrs)	Symptom	Previous trauma	Blood pressure (mmHg)	Fasting Blood glucose (mmol/L)	Follow-up time	Relapse
1	F	48	Pain, Swell	None	120/88	6.8	2 Year	None
2	F	54	Swell	None	137/93	5.7	1 Year	None

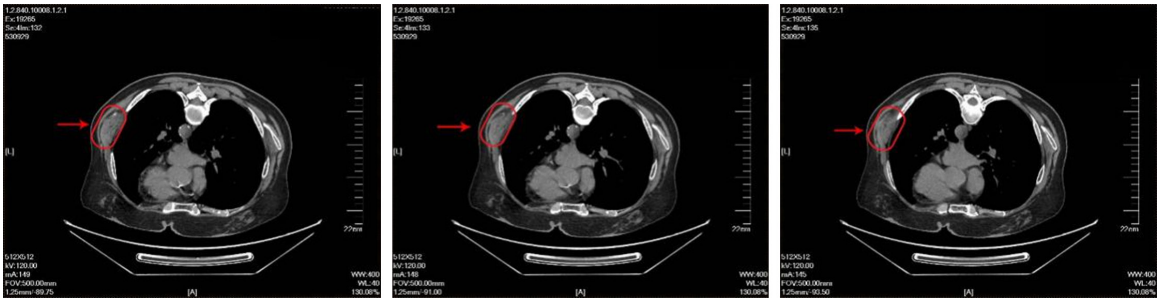

Figure 1. Case 1: Chest CT in prone position of showed the mass in the infrascapular area of the left back. The arrows indicate Elastofibroma at different CT levels.

Figure 2. Case1: The picture shows the anatomic location, procedure of resection, and gross pathology.

sion for 2 years and diabetes for 15 years. The blood pressure and blood glucose were well controlled with medical management. The patient accidentally found a soft mass on her left back, about the size of an egg, with no skin erythema or inflammation approximately two years ago. In the 4 months before her visit, the patient's left back mass gradually increased in size and gave her mild dull pain and discomfort. Its size reached approximately 8x5x4 cm when she came to our hospital. Before she visited us, the patient had sought medical attentions from multiple other institutions with failed diagnosis and treatment. With misdiagnosis as anxiety disorder, the patient had suffered from great psychological and social stress.

CT examination was performed, which demonstrates a skeletal muscle density dorsal mass located between the infrascapula and rib cage, suspicious for elastic fibroma (**Figure 1**). The surgical excision of the mass was planned. Intraoperative exploration showed that the mass was located at the subscapular angle, between the latissimus dorsum and the intercostal external muscle, about 10x8x9 cm (**Figure 2**), with partial capsule, clear boundary and good range of motion. After the excision was completed, irrigation was performed followed by hemostasis, suture and pressure dressing. The mass was sent for pathological examination and the pathological diagnosis was elastofibroma (**Figure 3**).

Another case was an elastofibroma dorsi on the right back. Intraoperative exploration showed that the mass was located at the subscapular angle, between the latissimus dorsum and the intercostal external muscle, about 8x8x4 cm. Pathological examination confirmed elastofibroma. We followed up this case for 1 year without recurrence (**Figure 4**).

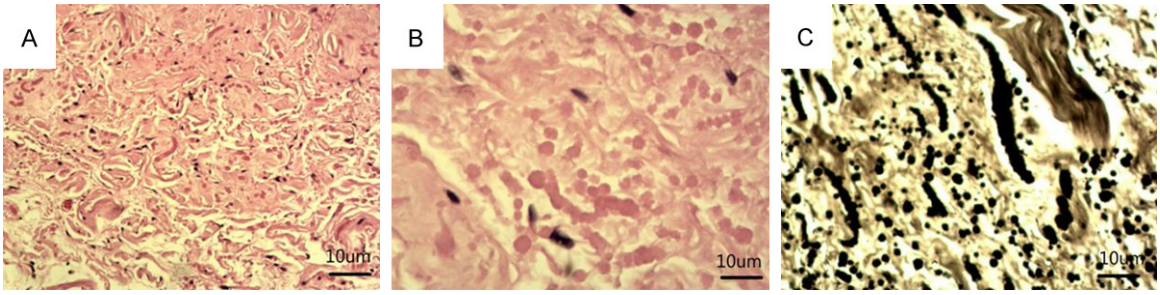

Figure 3. Case1: Pathological results of the Elastofibroma removed from our patient. (A, B) Hematoxylin and eosin staining of the biopsy specimen shows altered elastin fibers and interspersed mature adipose tissue in a fibrous background (A, x100; B, x400). (C) Immuno-histochemical staining shows elastin fibers and interspersed mature adipose tissue (x400).

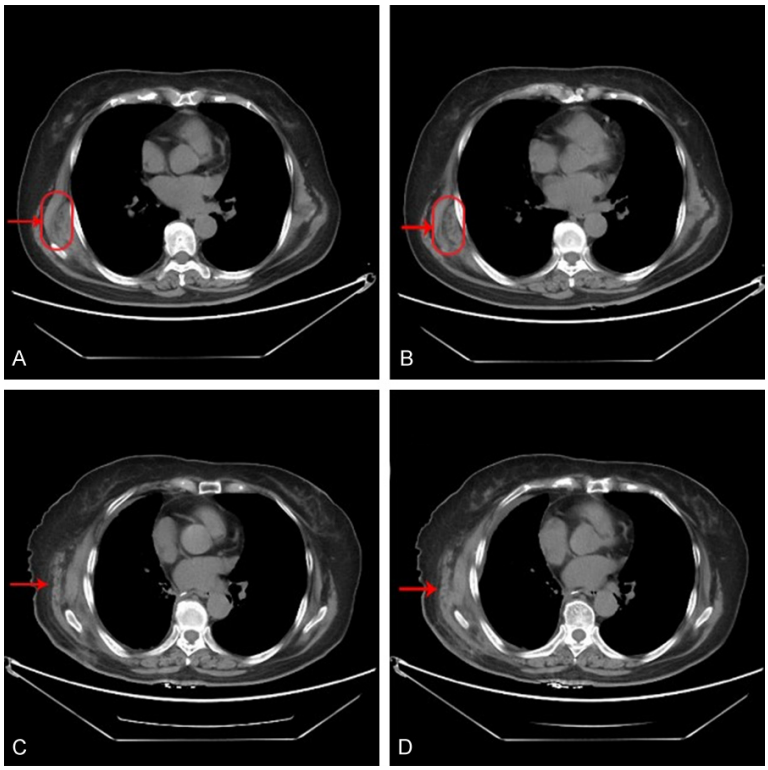

Figure 4. Case 2: Chest CT in supine position of showed the mass at pre-operation and 1 year after surgery. A, B. CT images of pre-operation. The arrows indicate Elastofibroma at different CT levels. C, D. CT images of 1 year after surgery. The arrow indicates the position of the Elastofibroma after resection.

Discussion

Elastofibroma is rare in clinical practice, with a reported incidence rate of 0.23/100 [6]. The most common type of elastofibroma is Elastofibroma Dorsi (ED). We included a summary of reported cases of ED in the past 20 years (**Table 2**). The incidence rate of ED in women is higher than that of men, which is mostly unilateral and the average age of onset is around 55 years old. The pathogenesis of ED is still unclear. Most studies believe that mechanical friction between scapula and chest wall is the cause of the occurrence and development of ED. Kuroda and Marin indicated that ED was related to the degeneration of elastic tissue and vascular degeneration [7, 8]. Pathological studies have shown that both periostin and tenascin-C might play a pivotal role in the formation of ED [9]. Elastofibroma mainly occurs in the subscapular region of the chest wall at the level of the 6th to 8th rib, and in the deep surface of latissimus dorsi, serratus anterior and rhomboid muscles. A few cases have been reported in the suprascapular region and gastrointestine [10-12]. The lesion size is usually greater than 5 cm. Elastofibroma grows slowly and the course of disease can be several years. Most patients do not have any clinical symptoms, while some patients present with pain and discomfort at the lesion site. Sometimes, because the tumor is often compressed between the scapula and the chest wall, the tumor is not detectable at neutral position. The mass may be visible and palpable only when the arm is adducted and

Table 2. Published Elastofibroma dorsi case series from 2010 to 2020

Study	N	Gender (F:M)	Mean age at diagnosis (yrs)	Unilateral: bilateral
Tepe M *et al.*, 2019 [1]	111	77:34	68.2	NR
Tsubakimoto M *et al.*, 2018 [2]	44	22:22	66	15:29
Bartocci M *et al*., 2017 [3]	82	55:27	60	57:15
Deveci MA *et al.*, 2017 [4]	51	45:6	55	32:19
Di Vito A *et al.*, 2015 [5]	11	4:7	60	11:0
Nagano S *et al.*, 2014 [6]	20	12:8	63	NR
Tsikkinis C *et al.*, 2014 [7]	6	4:2	55	5:1
Findikcioglu A *et al.*, 2013 [8]	30	9:1	55	3:2
Ramos R *et al.*, 2011 [9]	12	7:5	53	2:1
Cinar BM *et al*., 2009 [10]	13	11:2	54	11:2
Kastner *et al*., 2009 [11]	11	9:2	62	10:1
Muratori *et al*., 2008	8	7:1	61	7:1
Daigeler *et al*., 2007 [12]	7	5:2	64	6:1
Vastamaki *et al*., 2001 [13]	5	3:2	62	4:1

N: sample size of study; *NR*: not reported.

flexed. In our case, the patient visited doctors several times, but negative findings in the prior physical examinations led to failed diagnosis and treatment.

The diagnosis of elastofibroma is mainly made by imaging modalities, such as CT and MRI assays. For patients with unclear imaging examination, preoperative puncture biopsy can be used for diagnosis, but puncture biopsy is not considered as a necessary examination [13]. The differential diagnosis of elastofibroma includes lipoma, fibrous lipoma, cystic tumor or invasive tumor.

The treatment of ED is mainly surgical treatment, especially for patients with tumor exceeding 5 cm and obvious clinical symptoms such as pain, discomfort and limited activity in the lesion site. Pathological examination is necessary after operation to support the previous diagnosis. Surgical resection of elastofibroma has a good prognosis. In a retrospective study of 330 cases of elastofibroma, only 6 patients relapsed and none of the patients developed malignant transformation [3].

In conclusion, pertinent medical history, appropriate physical examination, in combination with CT or MRI examination can improve the diagnosis of elastofibroma, although lack of awareness of this disorder usually causes misdiagnosis. Surgical excision of the elastofibroma is the treatment of choice. Timely diagnosis and treatment can eliminate the fear of patients with malignant tumors, reduce the psychological stress of patients, and improve their quality of life.

Disclosure of conflict of interest

None.

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