International Surgery Journal
Ozer D et al. Int Surg J. 2019 Feb;6(2):388-391
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: http://dx.doi.org/10.18203/2349-2902.isj20190041

Original Research Article

Elastofibroma dorsi: evaluating the sufficiency of magnetic resonance in diagnosis and the time of surgical treatment

Devrim Ozer[1], Yavuz Arikan[1]*, Cantay Gok[2]

[1]Department of Orthopaedics and Traumatology, [2]Department of Radiology, MS Baltalimani Bone Diseases Training and Research Hospital, Istanbul, Turkey

Received: 23 November 2018
Revised: 29 December 2018
Accepted: 03 January 2019

***Correspondence:**
Dr. Yavuz Arikan,
E-mail: doctoryavuzarikan@gmail.com

ABSTRACT

Background: Elastofibroma dorsi is a rarely seen fibroelastic pseudotumor. While radiological evaluation can be best done with magnetic resonance imaging (MRI), biopsy may be additionally required in diagnosis. Surgical excision of the tumor is recommended in painful cases, however, many cases can be treated and followed with conservative methods. In our study, we evaluated the features and sufficiency of MRI in diagnosis, the growth extent of the masses and the need for surgical treatment.
Methods: Eight lesions of the five patients diagnosed and followed up in our clinic between the years 2014 and 2017 were included in the study. All patients were female and had a mean age of 60.4 (50-68). Lesions were bilaterally located in three patients. Seven lesions were diagnosed with MRI and one was diagnosed with biopsy. The size of the lesions at the time of diagnosis and final follow-up and differences in the radiological features were evaluated by the same experienced radiologist using MRI. Complaints of the patients were evaluated, and their clinical examinations were performed.
Results: The mean period of follow-up was 22.4 (8-42) months. The masses had a mean diameter of 59.5 (40-75)mm in the craniocaudal plane and 59.4 (40-70) x 22.4 (10-36)mm in the axial plane at the time of diagnosis and a mean diameter of 60.5 (40-75)mm in the craniocaudal plane and 61 (43-70) x 22.6 (10-36)mm in the axial plane at the final follow-up. At the final follow-up, two patients had three lesions without pain and three patients had five lesions with mild pain. No movement limitation was observed.
Conclusions: Typical MRI findings were observed in all lesions (including the one that was performed biopsy) and biopsy was not planned for the lesions with typical findings. All lesions were followed by conservative management and no discontent was reported by the patients. Surgical treatment was planned in case of severe pain, rapid growth and advanced clinical symptoms.

Keywords: Diagnosis, Elastofibroma dorsi, MRI findings, Surgery

INTRODUCTION

Elastofibroma dorsi is a rarely seen fibroelastic pseudotumor that develops in the connective tissue and shows a slow growth. The lesion was first described by Jarvi and Saxen in 1961.[1] It is usually seen in people over 50 years of age and women but it was also reported in children.[2,3] In 99% of the cases, the mass is located in the inferior subscapular region, between the scapula and the thoracic wall.[4] Atypical locations include the olecranon, the axilla, the feet, deltoid muscle, inguinal region, stomach and the omentum.[5] Although its etiology has not been fully understood, the increase in the production of elastic tissue due to the stimulation of fibroblasts as a

result of the chronic friction between the thoracic wall and the inferior end of the scapula and genetic factors were implicated.[6,7] These lesions are usually asymptomatic.[2,8] The usual symptoms include mild swelling in the back, mild to moderate pain and the 'catching' sensation in the scapular region during shoulder movements.[2,8] Although MRI may be the best method for radiological evaluation and can suffice for diagnosis, the need for open or core-needle biopsy was also indicated.[8-14] Surgical excision is recommended in symptomatic cases, however, many cases can be followed without the need for surgery.[8-10,11,15]

In present study, authors evaluated the sufficiency of MRI in diagnosis, whether the follow-up of the patients could be performed without surgical treatment and the time surgical treatment may be necessary.

METHODS

Eight lesions of the five patients diagnosed and followed up in our clinic between the years 2014 and 2017 were included in the study. The study was designed and carried out in a retrospective manner. The cases had not been treated for elastofibroma dorsi in another center and their diagnoses were made at authors' clinic. All cases which regularly followed-up were included in the study. All of these cases were followed by conservative methods and the patients who were not surgically excised. All lesions were in the subscapular region and locations were bilateral in three patients.

All patients were female with a mean age of 60.4 (50-68). Seven lesions were diagnosed with MRI and one was diagnosed with biopsy. Biopsy results were evaluated, and the diagnosis was made by a pathologist experienced in orthopedic oncology. Magnetic resonance images of the patient who underwent biopsy were reevaluated for the presence of typical elastofibroma findings and the size of the lesion at the time of diagnosis were recorded like the others. The use of computed tomography or ultrasonography was not required during the diagnosis or the follow-up period.

Authors used a 1.5-Tesla MRI device and took the T1 and T2 images of all cases in the coronal, axial and sagittal planes. The MRI findings and the size of the lesions at the time of diagnosis and final follow-up were evaluated by the same experienced radiologist in orthopaedic oncology. No contrast agent was used during the follow-ups after the cases were diagnosed based on the findings of typical elastofibroma on the MR images. The Follow-up protocol was planned with MRI scan, once every 3 months, every 6 months and then once a year. The patients were asked to show up regularly for their follow-up examinations.

Millimetric measurements of the size of the lesions were made on the craniocaudal (cc) and axial (ax), anteroposterior and lateral radiographs. Complaints of the patients were evaluated, and their clinical examinations were performed. Fibromyalgia pain which is frequently encountered in the same region with the lesion site was kept in mind to avoid wrongful diagnosis.

Shoulder movements were examined for presence of pain, limitation of movement and catching during abduction. After giving information about their diseases, the patients were asked for surgery because of their current complaints. The study was approved by the ethics committee of our hospital.

RESULTS

The mean period of follow-up was 22.4 (8-42) months. All lesions (including the one that was performed biopsy) exhibited the same intensity with the muscles, did not have a capsule, consisted of fibrous tissue and fibers accompanied by fatty tissue and had marginal boundaries due to its non-encapsulated structure in T1 and T2-weighted MRIs (Figure 1).

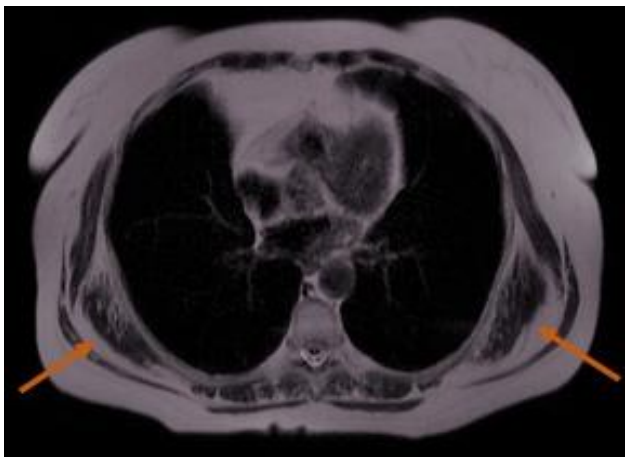

Figure 1: Typical appearance of the bilateral elastofibroma dorsi on the axial T1-weighted image.

The masses had a mean diameter of 59.5 (40-75)mm in the craniocaudal plane and 59.4 (40-70) x 22.4 (10-36)mm in the axial plane at the time of diagnosis and a mean diameter of 60.5 (40-75)mm in the craniocaudal plane and 61 (43-70) x 22.6 (10-36)mm in the axial plane at the final follow-up. Four lesions in three patients showed no growth during the follow-up period whereas other lesions showed minimal growths. None of the patients had a movement limitation or scapular snapping. Two patients had three lesions without pain, three patients had five lesions with mild pain and one patient had shoulder, back and neck pain on the same side with the lesion (Table 1). None of the patients reported about a significant discontent or demanded surgical treatment.

DISCUSSION

Elastofibroma dorsi is a rarely seen, benign soft tissue lesion located in the subscapular region in 99% of the

cases. Malignant transformation of the tumor has not been reported. Almost half of the cases are asymptomatic.[14,16] Symptoms of the lesion include swelling in the scapular region, pain, catching sensation in the scapular region during movement and scapular snapping.[2,13,17]

Table 1: Age of the patients, the side and size of the lesions at the final follow-up and intensity of the pain.

Cases	Age	Side and size of the lesions	Side and size of the lesions	Pain
1	SÖ, 68	-	Left, 75x70x25mm	None
2	NT, 66	-	Left, 55x50x21mm	Mild
3	NA, 50	Right, 67x76x36mm	Left, 55x67x25mm	Mild, mild
4	NY, 62	Right, 65x53x22mm	Left, 62x62x20mm	None, none
5	KP, 56	Right, 65x66x22mm	Left, 40x43x10mm	Mild, mild

Although clinical findings are of certain importance, radiological imaging is crucial for diagnosis. Ultrasonography, computed tomography and MRI methods are frequently used.[2,8] MRI is the gold standard among imaging modalities.[9] While some authors suggested that imaging methods were not sufficient on their own and biopsy was required for diagnosis, others reported that the accuracy of MRI was good enough to rule out the need for biopsy and that MRI findings were typical and sufficient for diagnosis.[7,11-13,18,19]

In the present study, authors had typical MRI findings for the lesions (including the case that was performed biopsy) typically located in the subscapular region and thus MRI alone was sufficient for diagnosis.

Plain follow-up may suffice in the treatment of asymptomatic patients.[8,9,10,14] Muratori et al, recommended surgical treatment for asymptomatic patients in cases where the lesion showed growth on the MRIs.[2] Surgery is indicated for the lesion types with symptomatic pain.[9,15] In addition, other authors suggested surgery for cases with pain and restriction of movement and for those whose lesions had a diameter larger than 5-8cm.[20,21]

Nagano et al, recommended surgery for cases with scapular snapping and discomfort related to the tumor. Marginal resection was considered to be adequate for surgical treatment.[2,15,22] Nishio et al, employed the wait-and-see approach even in symptomatic patients and considered conservative treatment in the first place.[11]

In present study, two patients had three lesions without pain and three patients had five lesions with mild pain. Four lesions in three patients showed no growth during the follow-up period whereas other lesions showed minimal growths on a millimetric scale. Patients reported about no significant discomfort related to their condition nor demanded surgical excision of the tumor. For this reason, the patients have been followed with conservative treatment to date.

CONCLUSION

In cases of elastofibroma dorsi developed in the subscapular region, if the MRIs exhibit typical findings and are sufficient for diagnosis, the pain is mild to none, there is no significant discomfort of the patient and the lesion shows slow growth (considering that rapid growth is not the typical behavior of this tumor), patients can be followed with conservative treatment and the wait-and-see approach. The limited number of our patients and the short follow-up period were the limitations of present study.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Jarvi OH. Elastofibroma dorsi. Acta Pathol Microbiol Scand. 1961; 114: 83-4.
2. Muratori F, Esposito M, Rosa F, Liuzza F, Magarelli N, Rossi B, Folath HM, Pacelli F, Maccauro G. Elastofibroma dorsi: 8 case reports and a literature review. J Orthopaed Traumatol. 2008 Mar;9(1):33-7
3. Kransdorf MJ, Meis JM, Montgomery E. Elastofibroma: MR and CT appearance with radiologic-pathologic correlation. AJR. Am J Roentgenol. 1992 Sep;159(3):575-9.
4. Dinauer PA, Brixey CJ, Moncur JT, Fanburg-Smith JC, Murphey MD. Pathologic and MR imaging features of benign fibrous soft-tissue tumors in adults. Radiographics. 2007 Jan;27(1):173-87.
5. Schick S, Zembsch A, Gahleitner A, Wanderbaldinger P, Amann G, Breitenseher M, et al. Atypical appearance of elastofibroma dorsi on MRI: case reports and review of the literature. J Computer Assisted Tomography. 2000 Mar 1;24(2):288-92.

6. Giebel GD, Bierhoff E, Vogel J. Elastofibroma and pre-elastofibroma-a biopsy and autopsy study. Eur J Surgical Oncol. 1996 Feb 1;22(1):93-6.
7. Nagamine N, Nohara Y, Ito E. Elastofibroma in Okinawa. A clinicopathologic study of 170 cases. Cancer. 1982 Nov 1;50(9):1794-805.
8. El Hammoumi M, Qtaibi A, Arsalane A, El Oueriachi F, Kabiri EH. Elastofibroma dorsi: clinicopathological analysis of 76 cases. Korean J Thoracic Cardiovasc Surg. 2014 Apr;47(2):111.
9. Karrakchou B, Yaikoubi Y, Chairi MS, Jalil A. Elastofibroma dorsi: case report and review of the literature. Pan African Med J. 2017;28(1).
10. Nagano S, Yokouchi M, Setoyama T, Sasaki H, Shimada H, Kawamura I, et al. Elastofibroma dorsi: Surgical indications and complications of a rare soft tissue tumor. Molecular Clin Oncol. 2014 May 1;2(3):421-4.
11. Nishio J, Isayama T, Iwasaki H, Naito M. Elastofibroma dorsi: diagnostic and therapeutic algorithm. J Shoulder Elbow Surg. 2012 Jan 1;21(1):77-81.
12. Go PH, Meadows MC, Marie B deLeon E, Chamberlain RS. Elastofibroma dorsi: a soft tissue masquerade. Int J Shoulder Surg. 2010 Oct;4(4):97-101
13. Benign fibroblastic/myofibroblastic proliferations, including superficial fibromatoses. Enzinger and Weiss's Soft Tissue Tumors. ED: Goldblum JR, Folpe AL, Weiss SW. Philadelphia; 2014:220-224.
14. Daigeler A, Vogt PM, Busch K, Pennekamp W, Weyhe D, Lehnhardt M, et al. Elastofibroma dorsi–differential diagnosis in chest wall tumours. World J Surg Oncol. 2007 Dec;5(1):15.
15. Bartocci M, Dell'Atti C, Meacci E, Congedo MT, Magarelli N, Bonomo L, et al. Clinical features, imaging findings, treatment aspects of elastofibroma dorsi and long-term outcomes after surgical resection. Eur Rev Med Pharmacol Sci. 2017 May 1;21(9):2061-8.
16. Fletcher CD. Pathology and genetics of tumors of soft tissue and bone. World Health Organization Classification of Tumors. 2002;4:35-46.
17. Kastner M, Salai M, Fichman S, Heller S, Dudkiewicz I. Elastofibroma at the scapular region. Israel Med Assoc J. 2009 Mar 1;11(3):170-2.
18. Faccioli N, Foti G, Comai A, Cugini C, Guarise A, Mucelli RP. MR imaging findings of elastofibroma dorsi in correlation with pathological features: our experience. Med Radiol. 2009 Dec 1;114(8):1283.
19. Minarro JC, Urbano-Luque MT, López-Jordan A, Roman-Torres M, Carpintero-Benítez P. The comparison of measurement accuracy among three different imaging modalities in evaluating elastofibroma dorsi. an analysis of 52 cases. Int Orthopaed. 2015 Jun 1;39(6):1145-9.
20. Briccoli A, Casadai R, Di Renzo M, Favale L, Bacchini P, Bertoni F. Elastofibroma dorsi. Surg Today. 2000;30(2):147-52.
21. Schafmayer C, Kahlke V, Leuschner I, Pai M, Tepel J. Elastofibroma dorsi as differential diagnosis in tumors of the thoracic wall. Ann Thoracic Surg. 2006 Oct 1;82(4):1501-4.
22. Cakmak G, Ergün T, Şahin MŞ. Arthroscopic excision of elastofibroma dorsi at scapulothoracic joint: a surgical technique. Joint Dis Related Surg. 2014;25(2):117-20.

Cite this article as: Ozer D, Arikan Y, Gok C. Elastofibroma dorsi: evaluating the sufficiency of magnetic resonance in diagnosis and the time of surgical treatment. Int Surg J 2019;6:388-91.