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Characterization of Elastofibroma Dorsi with ^{18}FDG PET/CT: a retrospective study

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ABSTRACT

Elastofibroma dorsi has been described in the literature as an unusual tumor or pseudotumor. However, autopsies and imaging studies have revealed that it is a non-negligible finding.
Purpose: The aim of this study has been to illustrate and become familiar with this type of lesion in order to prevent misdiagnosis.
Materials and methods: From 3 December 2008 to 5 January 2010, 1,751 patients were evaluated with ^{18}FDG-PET/CT. Of these, 29 cases of elastofibroma dorsi were recorded as an incidental finding. A retrospective and descriptive analysis was performed on this study series.
Results: The study showed a prevalence of 1.66%. Out of the 29 findings, 22 (75.86%) were females and 7 (24.14%) males. Seventeen (58.62%) cases were bilateral, 12 (41.38%) unilateral and the SUVmax ranged from 1.4 to 3.2. These lesions were reported as soft tissue density images with mild or moderate diffuse metabolic activity.
Conclusion: The elastofibroma dorsi is a relatively common finding in PET/CT that should be known in order to avoid making wrong diagnoses.

Caracterización de elastofibroma dorsi con ^{18}FDG-PET/TAC: un estudio retrospectivo

Palabras clave:
Elastofibroma dorsi
PET-TAC
^{18}F-deoxiglucosa (FDG)
SUVmáx

RESUMEN

El elastofibroma dorsi ha sido descrito en la literatura como un tumor o pseudotumor poco frecuente. Sin embargo, autopsias y estudios de imagen han revelado que se trata de un hallazgo no despreciable.
Objetivo: El propósito de este estudio es describir y familiarizarse con este tipo de lesión para así evitar diagnósticos equívocos.
Material y métodos: Del 3 de diciembre de 2008 al 5 de enero de 2010, se evaluaron 1.751 pacientes mediante ^{18}FDG-PET/TAC, de los cuales 29 casos de elastofibroma dorsi fueron reportados como hallazgo incidental.
Resultados: Este estudio mostró una prevalencia del 1,66%. De los 29 casos, 22 (75,86%) fueron mujeres y 7 (24,14%) hombres. Diecisiete (58,62%) casos resultaron bilaterales, 12 (41,38%) unilaterales y el SUVmáx osciló entre 1,4 y 3,2. Dichas lesiones fueron descritas como imágenes con densidad de partes blandas con leve o moderada actividad metabólica difusa.
Conclusión: El elastofibroma dorsi es un hallazgo relativamente frecuente en PET/TAC. Sus características deberían ser conocidas a fin de evitar diagnósticos erróneos.

Introduction

Elastofibroma dorsi is a benign tumour or a pseudotumour most commonly located in the subscapular region. It is more frequently found in adults and elderly women and it has been described in the literature as an unusual lesion. It is a non-encapsulated lesion made of elastic and connective fiber accumulation, associated to fibroblasts and adipocytes. It is commonly asymptomatic and when it manifests clinically, it does so in the form of a painful mass.Its radiological aspect has been documented with ultrasound, computed tomography (CT) and Magnetic Resonance Imaging (MRI). However, the number of articles documenting its characteristics with PET/CT is scarce.The aim of this study is to characterize**,** through a case series**,** the findings of Elastofibroma Dorsi in PET/CT and to stress that it is not an infrequent finding, and therefore its recognition is important in order to avoid misdiagnosis.

Materials and methods

This is a retrospective and descriptive study of a series of 29 cases of patients who underwent a PET/CT scan in our institution (Fundación Centro Diagnóstico Nuclear) between December 3rd, 2008 and January 5th, 2010. These patients were referred for staging or restaging of a malignant neoplasia and the presence of elastofibroma dorsi was found and reported as an incidental finding. During this period, 1,751 PET/CT were performed in a Positron Emission Tomograph PET/CT Discovery STE-16 (General Electric) after 45-60 min of the intravenous administration of 4.07 MBq/kg of ^{18}F-deoxiglucose (FDG). The patients were studied with a min-

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Table 1
Elastofibrome Dorsi on ^{18}FDG-PET/CT scans of 1,751 Patients. General characteristics.

EFD	Number of patients	Sex (%) M/F	Age	SUVmax	Prevalence (%)
Right Unilateral EFD	11	27/73	65 ± 10	2.0 ± 0.3	0.63
Left Unilateral EFD	1	F	65	1.7	0.06
Bilateral EFD	17	23/77	67 ± 12	2.2 ± 0.5	0.97
Total	29	24/76	66 ± 11	2.1 ± 0.5	1.66

Period: December 2008 to January 2010.
EFD: Elastofibrome Dorsi.

imum of a 6-hour fasting and their glucemy was checked. In all the cases, it was less than 180 mg/dl. Axial slices of 3.3 mm-thick in the PET study and of 2.5 mm-thick in CT were performed, using CT-based attenuation correction, with randoms, scatter and resolution recovery corrections activated in all cases. The images were reconstructed in multiplanar slices and analysed through semi quantitative evaluation of the metabolism, using the maximum Standard Uptake Value (SUVmax).

Results

Between December 3rd, 2008 and January 5th, 2010, 1,751 PET/TC were performed in our institution. Twenty nine cases of elastofibroma dorsi were recorded which is equivalent to a prevalence of 1.66%. They were 22 women (75.86%) and 7 men (24.14%) with ages ranging from 46 to 86 years old, with an average age of 66.3. In 17 patients, the elastofibroma dorsi was bilateral (58.62%) and in 12 patients it was unilateral (41.38%), 11 of which were in the subscapular right region and only one on the left side. The SUVmax ranged from 1.4 to 3.2, with an average value of 2.11. Table 1 summarizes the characteristics of our population.

In many cases, the lesion was visible at maximum intensity projections (MIP) which is the first image evaluated by our radiologists and nuclear physicians. In the frontal MIP projection, an oval image with moderate or low intensity uptake of FDG at the unilateral or bilateral pectoral level was identified. The lateral MIP projection showed that such lesions were placed at the posterior part of the chest, therefore belonging neither to mammary gland nor lung tissue (fig. 1).

In the axial plane of the PET study, again it was clear that those lesions were placed at the posterior part of the thorax and that they corresponded to oval images with low or moderate diffuse and mostly homogeneous uptake of the radiotracer. In the fusion with CT, its placement was in the subscapular region, behind the serratus anterior muscle and medial to the latissimus dorsi muscle. The CT showed a lesion with soft tissue density, similar to those of the adjacent muscular structures (fig. 2).

Discussion

Since its first description in 1961 by Jarve and Saxen,[1] the elastofibroma dorsi has been largely described as a non frequent lesion. Nevertheless, Brandser et al[2] reported a 2% prevalence in an asymptomatic elderly population studied with a chest CT. On the other hand, in a series of autopsies[3] in people older than 55 years old, there was a prevalence of 24% in women and 11% in men. Our prevalence of 1.66% reaffirms the idea that the elastofibroma dorsi is a relatively frequent finding.

Regarding the bilateral nature of lesions, we have found contradictory results. Some papers have reported both regions being affected in only 10% of the cases.[4] However, in other case series, the percentage is much higher, between 60 and 75% of the cases.[5–7] Our results are similar to the latter, with a percentage of near 59%. In our study, the affected region has almost always been (except

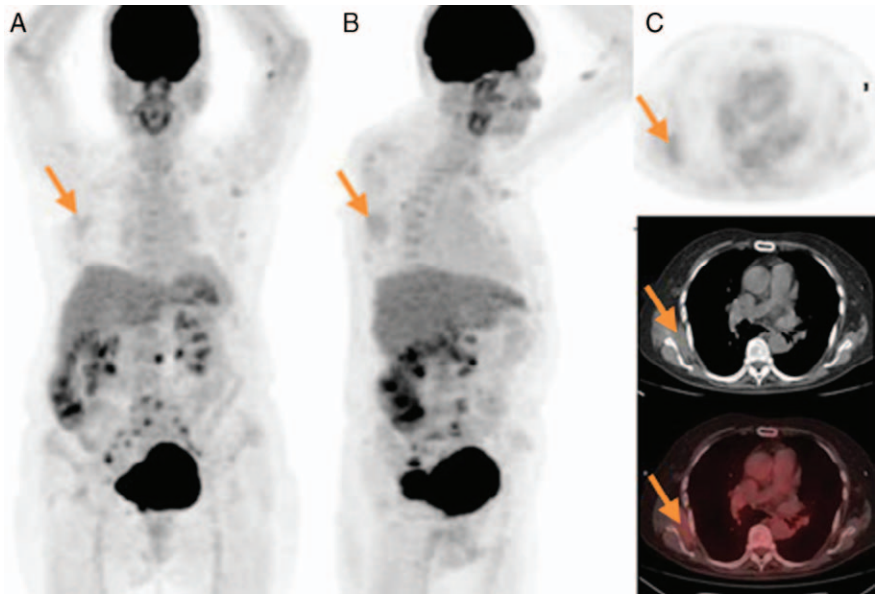

Figure 1. Frontal (A) and lateral (B) MIP projection of a ^{18}F-FDG PET study. Increased FDG accumulation (SUVmax = 2.1) on the right posterolateral chest in a patient with metastasic uterine cancer. C) Axial PET and fused PET/CT images demonstrate a right subscapular lesion which corresponds to a unilateral elastofibroma dorsi.