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OLGU SUNUMU / CASE REPORT

Somatostatin Receptors of Elastofibroma Dorsi, Shown with Ga-68 DOTATATE PET-CT

Tamer Aksoy, Esra Arslan, Cihan Gündogan, Göksel Alçın

Istanbul Education and Research Hospital, Department of Nuclear Medicine, Istanbul, Turkey

Tamer Aksoy, M.D.
Esra Arslan, M.D.
Cihan Gündogan, M.D.
Göksel Alçın, M.D.

ABSTRACT

Elastofibroma dorsi is a rare, benign, slowly-growing connective-tissue tumor that occurs most often in the infrascapular area in elderly people. It can be detected with various imaging modalities, like CT, MRI, USG and PET. Somatostatin is an endogenous hormone known by its inhibitory and neurotransmitter effects. Ga-68 DOTATATE which is a radiolabeled somatostatin analogue may show various uptake in physiological structures and also in tumor cells. Here in this case report, we describe the receptor expression of ED and present a case whose Ga-68 DOTATATE PET-CT scan revealed bilateral infrascapular soft tissue lesions, consistent with elastofibroma dorsi. According to our knowledge, this is the second case report in the literature, showing somatostatin receptor expression in elastofibroma dorsi.

Keywords: Elastofibroma dorsi, somatostatin receptor, Ga-68 DOTATATE; PET-CT

ELASTOFİBROMA DORSİDE GA-68 DOATATE PET-BT İLE GÖSTERİLEN SOMATOSTATİN RESEPTÖR EKSPRESYONU

ÖZET

Elastofibroma dorsi sıklıkla yaşlı popülasyonda gözlenen, yavaş büyüyen bir infraskapuler bölge yerleşimli konnektif doku tümörüdür. Sıklıkla BT, MR, USG ve PET gibi çeşitli yöntemler ile saptanırlar. Somatostatin inhibitör ve nörotransmitter özellikleri ile bilinen endojen bir hormondur. Radyoaktif işaretli bir somatostatin analoğu olan Ga-68 DOTATATE pek çok doku ve tümörde değişen oranlarda tutum gösterebilir. Bu olgu sunumunda, elastofibroma dorsinin reseptör ekspresyonları anlatılmakta ve ED ile uyumlu yumuşak doku lezyonlarında Ga-68 DOTATE PET-BT ile gösterilen somatostatin reseptör ekspresyonu anlatılmaktadır. Bilgimize göre bu olgu sunumu, elastofibroma dorsideki somatostatin ekspresyonun gösterildiği literatürdeki ikinci bildiridir.

Anahtar sözcükler: Elastofibroma dorsi, somatostatin reseptörü, Ga-68 DOTATATE; PET-BT

Correspondence:
M.D. Tamer Aksoy
Istanbul Education and Research Hospital, Department of Nuclear Medicine, Istanbul, Turkey
Phone: +90 542 484 80 05
E-mail: drtaksoy@gmail.com

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Elastofibroma dorsi (ED) is a rare, benign, slowly-growing connective-tissue tumor that occurs most often in the subscapular area in elderly people, especially seen in women. It was first described by Jarvi and Saxen, in 1961 (1). ED is described as an accumulation of abnormal elastic fibers and is generally regarded as a reactive process, an unusual

fibroblastic pseudotumor. This lesion classically occurs in the infrascapular region, deep to serratus anterior and latissimus dorsi. These lesions are bilateral in up to 60% of cases and when unilateral they are more often seen on the right than left (2). Less

common locations of ED are ischial tuberosity, olecranon or at another site along the thoracic wall. Though initially thought to be rare, these lesions can be found incidentally in up to 2% of all chest CTs and 1.7% in PET-CT studies (3, 4). But autopsy series found the prevalence of the lesions is up to 25% in women (5). No treatment is required unless the patient is symptomatic. In those cases, the lesion can be surgically excised. CT findings of a poorly defined, soft tissue density lesion with internal fat striations in the infra scapular region are diagnostic for ED; the soft tissue component demonstrates similar density to the adjacent skeletal muscle. However, these lesions can appear homogeneous if the internal fat content is low. These lesions may be found on MRI or ultrasound imaging in the work-up of a symptomatic patient. Similar to CT, MRI findings may demonstrate a fibro-fatty lesion, with the fibrous tissue appearing isointense to skeletal muscle on T1- and T2-weighted imaging. Various studies and case reports were found in the literature defining the role of Positron Emission Tomography (PET) agents in the diagnosis of ED, like F-18 FDG. Mildly F18 FDG uptake was described in PET studies (6) and also, F-18 DCFPyL, which is an F-18 labeled prostate-specific membrane antigen targeting molecule (7). But, to the best of our knowledge, there is just a single case report declaring the role of Ga-68 DOTATATE ([DOTA0, Tyr3, Thr8] octreotide) expression in ED (8).

Case Report

A 59-year-old female, who was referred to our clinic for Ga-68 DOTATATE PET scan for the staging of rectal neuroendocrine neoplasia (KI-67 index: 15%). She had just a prior colorectal surgery and no prior known disease. Ga-68 DOTATATE PET-CT scan revealed bilateral subscapular soft tissue masses showing increased somatostatin receptor expression. CT component of the scan revealed bilateral subscapular non-homogeneous malignant limited mass lesions measuring approximately 28×42 mm's; with a density similar to muscles, including areas of lower density areas secondary to fat. Both lesions showed increased Ga-68 DOTATATE uptake (SUVmax: 4.21). During post-scan interrogation, she said she suffered mild subscapular pain for some time but did not tell the exact period.

In the PET scan, there is also a 7 mm. measuring subdiaphragmatic nodular lesion showing increased somatostatin (SST) receptor expression; which is reported as accessory spleen, and confirmed with MRI (Figure 1). No other somatostatin receptor expressing abnormal lesion, suggestive of local recurrence or distant metastasis, was noted.

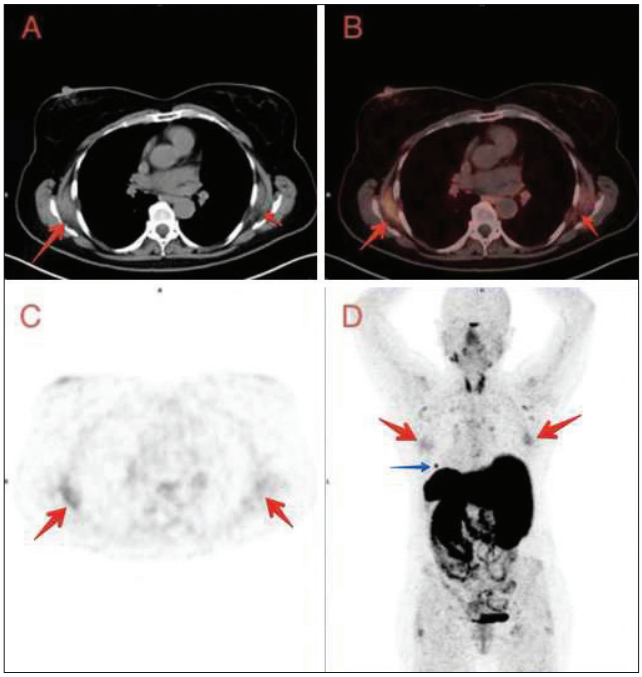

Figure 1. Axial slices of CT **(a)**, PET/CT fusion **(b)**, PET **(c)** and posterior projection of MIP **(d)** images showing, bilateral infrascapular soft tissue lesions with slightly Ga-68 DOTATATE uptake *(red arrows)* are noted. Focal Ga-68 DOTATATE uptake corresponding with accessory spleen *(blue arrow)* is noted on MIP image.

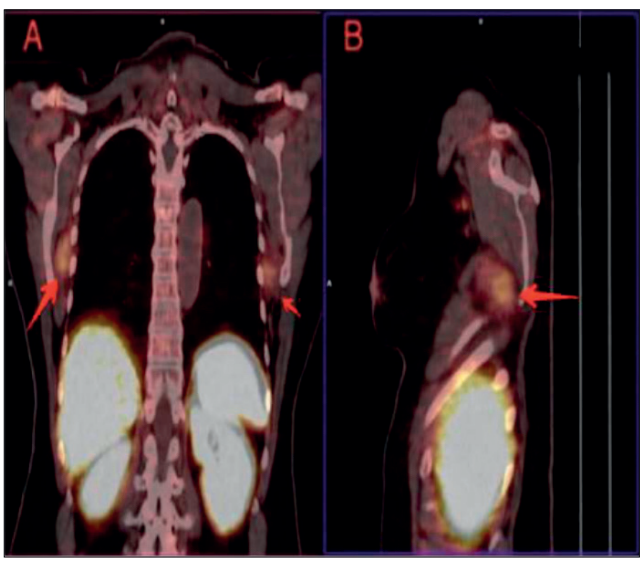

Figure 2. Red arrows on coronal (a) and sagittal (b) images showing infrascapular soft tissue lesions, corresponding with elastofibroma dorsi.

Discussion

SST is an endogenous cyclic tetradecapeptide hormone. Primarily inhibitory in nature, this small peptide has antisecretory and anti-proliferative effects and functions as a neurotransmitter. SST binds to five subtypes of G-protein coupled transmembrane receptors (SSTR 1-5). SSTR's are widely expressed in normal tissues as well as malignant

and inflammatory situations. Ga-68 DOTATATE which is a radiolabeled SST analogue shows a high affinity to SSTR type 2 but can bind with varying affinity to the other SSTR subtypes. Various studies searched for immunohistochemical staining status of ED; which found expression of vimentin, factor XIIIa and CD34 but negatively for smooth muscle actin, S-100, desmin, and p53 (9). To our knowledge, there was no study investigated the SSTR expression in ED.

Here in this case report, we have presented a 59-years-old female, whose Ga-68 DOTATATE PET imaging revealed bilateral subscapular soft tissue lesions consisted with elastofibroma dorsi, showing SSTR expression (Figure 2). Although there is no histopathological sampling; patient demographics, location, size and anatomical characteristics of the lesions are consisted with the literature. This is the second case report showing SSTR expression on elastofibroma dorsi.

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