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Olgu Sunumu

Case Report

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Fibrous Dysplasia with High Level FDG Uptake: A Case Report
Yüksek Düzeyde FDG Tutulumu Gösteren Fibröz Displazi: Olgu Sunumu

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Abstract

Fibrous dysplasia (FD) is a commonly seen benign bone disorder characterized by replacement of fibro-osseous tissue in the normal bone marrow. It usually occurs in childhood. FD may be seen in single or multiple bones. Rib is one of the most common sites of FD involvement. FD is usually asymptomatic and commonly detected on imaging studies incidentally. Here, we report a 64-year-old female patient diagnosed with FD on the rib which was detected on fluorodeoxyglucose positron emission tomography (FDG PET). The features of our case are adult age and very high FDG uptake on PET.

Key Words: Fibrous dysplasia, PET, FDG

Özet

Fibröz displazi (FD) normal kemik iliğine fibroosseöz dokunun yerleşimi ile karakterize sıkça görülen benign bir kemik tümörüdür. Genellikle çocukluk çağında ortaya çıkar. FD tek ya da çok sayıdaki kemikte görülebilir. Kosta FD tutulumunun en sık görüldüğü kemiklerden biridir. FD genellikle asemptomatiktir ve görüntüleme çalışmaları sırasında sıkça insidental olarak saptanırlar. Fluorodeoksiglukoz pozitron emisyon tomografisinde (FDG PET) saptanan, kosta FD tanılı 64 yaşında kadın bir hastayı sunuyoruz. Olgumuzun özelliği erişkin yaş ve PET’de çok yüksek FDG tutulumudur.

Anahtar Kelimeler: Fibröz displazi, PET, FDG.

Introduction

Fibrous dysplasia (FD) is a benign bone disorder characterized by replacement of fibro-osseous tissue in the normal bone marrow (1). Etiology is unclear and it is seen relatively common. The average age at onset is 10 years (2). The disease is named as monostotic form when involved single bone and polyostotic form when involved the multiple bones. FDs consist about 10% of all benign bone tumors; 70-80% of them monostotic and 20-30% polyostotic (3). Rib is one of the most common site of FD involvement. FD is usually asymptomatic and commonly detected on imaging studies incidentally (4). We present an adult case diagnosed with FD on the rib which mimicked a malignant lesion and showed high fluorodeoxyglucose (FDG) uptake on positron emission tomography (PET).

Case Report

A female patient aged 64 years was admitted to chest diseases clinic with pain and swelling in the left anterior chest wall. On X-ray, a radiolucent lesion was observed at the level of the middle zone of the left lung. There were not any abnormal laboratory findings. Afterward, computed tomography (CT) of chest was performed to the patient. On that CT, there was expanded bone lesion localized on the anterior of left 3rd rib which caused cortical destruction. FDG PET-CT was planned on suspicion of malignancy. On FDG PET-CT, hypermetabolic expanded bone lesion was viewed localized on the anterior of left 3rd rib which caused cortical destruction (Figure 1). SUVmax was 13,2. The lesion did not invade the adjacent structures, border of the lesion was regular and FDG uptake was homogeneous. There was no pathological FDG uptake on the other parts of the body. Because of the lesion was single and caused to complaints, it was excised. Pathologic examination was reported as FD.

Discussion

FD is a commonly seen benign bone disorder with unknown etiology. But etiology has been linked with a mutation in the alpha subunit of the Gs protein (3). The disease is commonly involved single bone and multiple bones are involved in smaller amounts. When polyostotic disease is associated with cutaneous and endocrine findings, it is named as McCune-Albright syndrome. Malignant transformation is rarely seen; approximately 0.5% (5). The risk is increased by radiotherapy (4). Malignant degeneration is more towards to osteogenic sarcoma and fibrosarcoma (2). They are usually asymptomatic but may cause pain, compressive symptoms, and pathologic fractures if they become larger. To prevent the pathological fractures and to treat symptomatic lesions, surgery may be

applied (4). Ribs are the commonly involved bones by FD. FD of rib is the most common benign tumor of the chest wall, approximately 30% of all benign chest wall tumors (6). Other most frequently involved sites are craniofacial bones, femur, tibia, spine and pelvis (3, 4).

Most useful imaging tool for the diagnosis of FD is CT and it is the best technique for demonstrating the typical radiographical features of it (4). The characteristic CT findings of FD are thinning of the bone cortex and expansion of the affected area with ground glass density (4, 7). Contrary to CT, magnetic resonance imaging (MRI) findings are not specific. FD shows low signal intensity on T1W images, but the signal intensity on T2W images is variable. On X-ray, sclerotic structures can be seen. Nuclear imaging methods such as FDG PET-CT, radionuclide bone scintigraphy and dual phase Tc 99 mMIBI scintigraphy imaging have also been used for the evaluation (8). Radionuclide bone scintigraphy is useful especially for evaluating polistatic form of the disease. New bone formation and increased vascularity caused the increased uptake of radiopharmaceuticals on bone scintigraphy.

FDG PET-CT is an important imaging modality using for tumor imaging. FDG uptake of FD is highly variable. In some studies, it was reported that FDG uptake is not high in FD lesions (9, 10) and also there were studies which were reported the FDG uptake in FD lesions is high (11-13). A significant increase in FDG uptake may mimic malignant bone involvement. In a study, it was reported that SUV max values of FD lesions ranged from 1.2 to 9.6 for 11 patients (14). This variability may be due to differing numbers of actively proliferating fibroblasts in FD lesions (14). Our patient had a significantly high FDG uptake of the FD lesion which, to the best of our knowledge, were not reported on the literature previously (SUVmax:13,2). Also age of our patient was much higher than average of this disease.

In conclusion, FDG PET-CT is not a routine examination method for FD evaluation. But considering the suspicion of malignant transformation, it may be important to know the metabolites. As well, FDG PET-CT can provide information about the number of the lesions.

References

1. Chapurlat RD, Orcel P. Fibrous dysplasia of bone and McCune-Albright syndrome. *Best Pract Res Clin Rheumatol* 2008;22(1):55-69.
2. Edgerton MT, Persing JA, Jane JA. The surgical treatment of fibrous dysplasia: With emphasis on recent contributions from cranio-maxillo-facial surgery. *Ann Surg* 1985;202(4):459-79.
3. Resnick D. Tuberos sclerosi, Neurofibromatosis, and fibrous dysplasia. In: Resnick D, editor. *Diagnosis of bone and joint disorders*. 3rd ed. Philadelphia, London, Toronto, Montreal, Sydney, Tokyo: Saunders; 1995. p. 4057-70.
4. DiCaprio MR, Enneking WF. Fibrous dysplasia. Pathophysiology, evaluation, and treatment. *J Bone Joint Surg Am* 2005;87(8):1848-64.
5. Özbek C, Aygenç E, Fidan F, et al. Fibrous dysplasia of the temporal bone. *Ann Otol Rhinol Laryngol* 2003; 112(7): 654-56.
6. Hughes EK, James SL, Butt S, et al. Benign primary tumours of the ribs. *Clin Radiol* 2006;61(14):314-22.
7. Sato K, Kubota T, Kaneko M, et al. Fibrous dysplasia of the clivus. *Surg Neurol* 1993;40(6):522-5.

8. Kim SJ, Seok JW, Kim IJ, et al. Fibrous dysplasia associated with primary hyperparathyroidism in the absence of the McCune-Albright syndrome: Tc-99m MIBI and Tc-99m MDP findings. *Clin Nucl Med* 2003;28(5):416-8.
9. Shigesawa T, Sugawara Y, Shinohara I, et al. Bone metastasis detected by FDG PET in a patient with breast cancer and fibrous dysplasia. *Clin Nucl Med* 2005;30(8):571-3.
10. Toba M, Hayashida K, Imakita S, et al. Increased bone mineral turnover without increased glucose utilization in sclerotic and hyperplastic change in fibrous dysplasia. *Ann Nucl Med* 1998;12(3):153-5.
11. Stegger L, Juergens KU, Kliesch S, et al. Unexpected finding of elevated glucose uptake in fibrous dysplasia mimicking malignancy: contradicting metabolism and morphology in combined PET/CT. *Eur Radiol* 2007;17(7):1784-6.
12. Charest M, Singnurkar A, Hickeson M, et al. Intensity of FDG uptake is not everything: synchronous liposarcoma and fibrous dysplasia in the same patient on FDG PET-CT imaging. *Clin Nucl Med* 2008;33(7):455-8.
13. Bonekamp D, Jacene H, Bartelt D, et al. Conversion of FDG PET activity of fibrous dysplasia of the skull late in life mimicking metastatic disease. *Clin Nucl Med* 2008;33(12):909-11.
14. Su MG, Tian R, Fan QP, et al. Recognition of fibrous dysplasia of bone mimicking skeletal metastasis on 18F-FDG PET/CT imaging. *Skeletal Radiol* 2011;40(3):295-302.

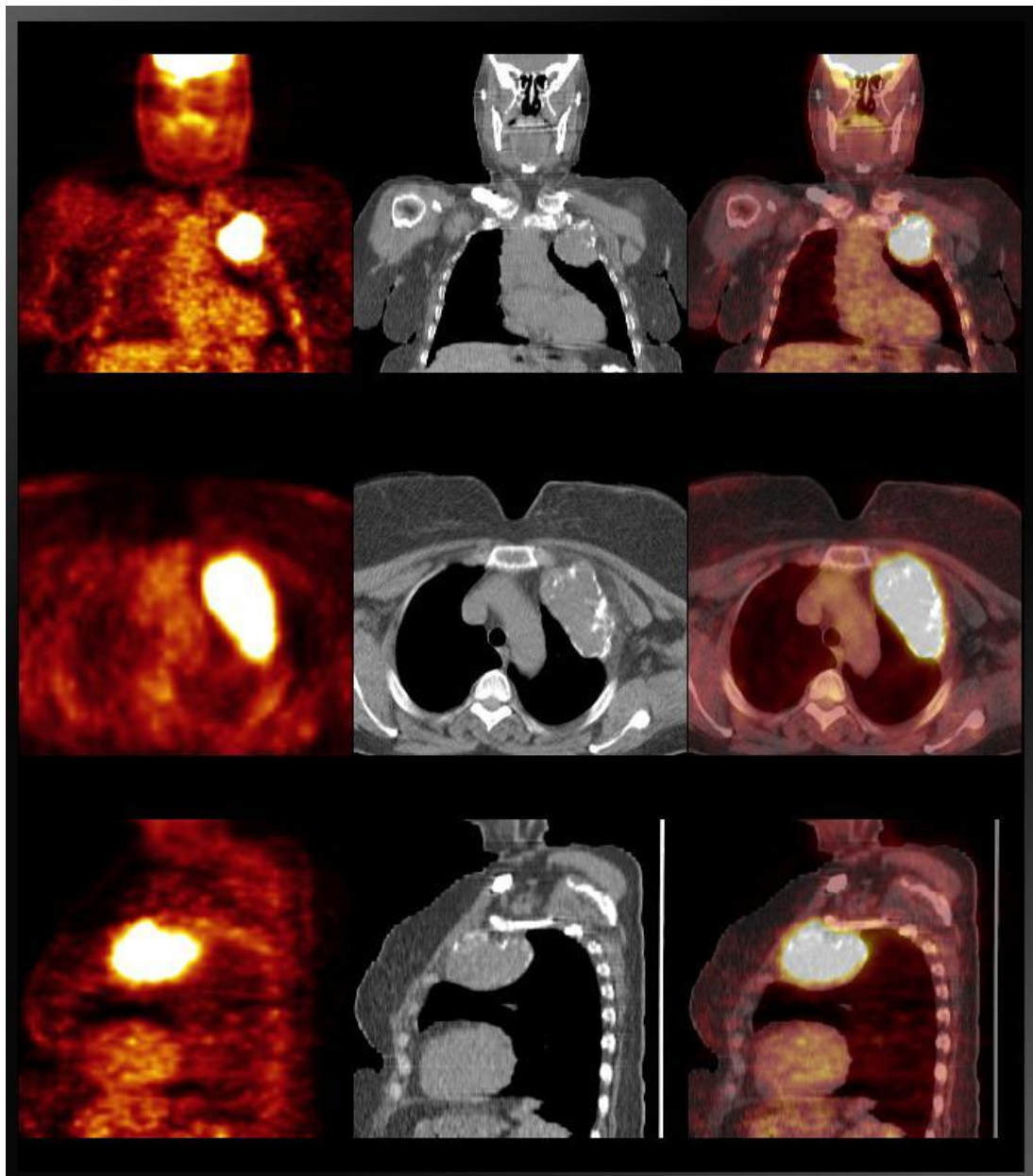


Figure 1: Hypermetabolic expanded bone lesion caused cortical destruction on the anterior of left 3rd rib (SUVmax:13,2)