Interesting Image

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Rare Acute Polyarticular Gout Disease Detected with ^{18}F-FDG PET/CT

^{18}F-FDG PET/BT ile Tespit Edilen Nadir Akut Poliartiküler Gut Hastalığı

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Abstract

Gout is an inflammatory arthropathy that develops due to the accumulation of monosodium urate crystals in the joints in adults. In approximately half of the cases, it presents as monoarthritis with an acute attack involving the first metatarsophalangeal joint. The first attack is rarely polyarticular. Herein, we present a male patient who presented with swelling and acute pain in the 5th toe but ^{18}F-fluorodeoxyglucose positron emission tomography/computed tomography showed symmetric polyarticular involvement which was mimicking arthritis.

Keywords: Gout disease, ^{18}F-FDG PET/CT, arthritis

Öz

Gut, yetişkinlerde eklemlerde monosodyum ürat kristallerinin birikmesi nedeniyle gelişen bir enflamatuvar artropatidir. Olguların yaklaşık yarısında, birinci metatarsofalangeal eklemi içeren akut atakla monoartrit olarak ortaya çıkar. İlk atak nadiren poliartikülerdir. Burada, 5. ayak parmağında şişlik ve akut ağrı ile başvuran ancak ^{18}F-fluorodeoksiglukoz pozitron emisyon tomografisi/bilgisayarlı tomografi'de artriti taklit eden simetrik poliartiküler tutulum gösteren bir erkek hastayı sunuyoruz.

Anahtar Kelimeler: Gut, hastalık, ^{18}F-FDG PET/BT, artrit

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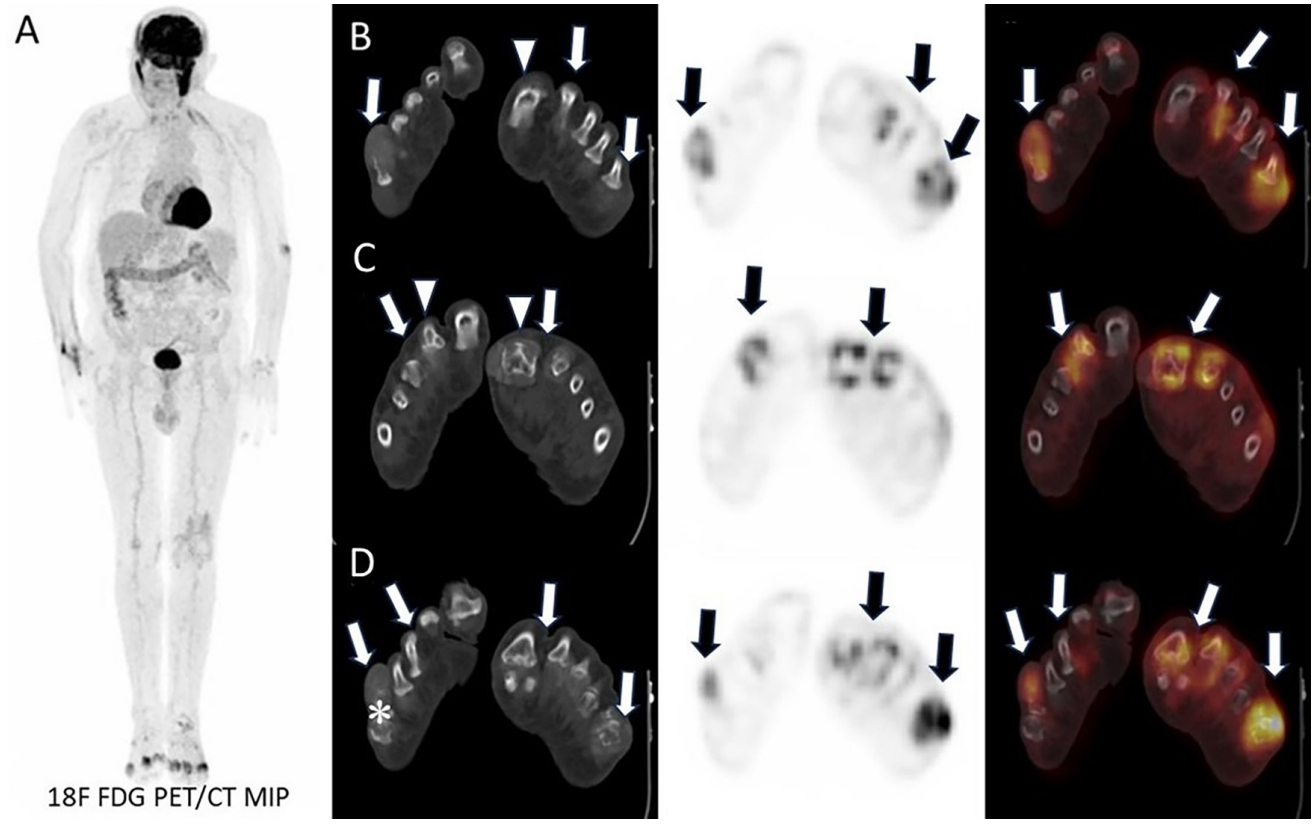

Figure 1. An 84-year-old man, with a known history of hypertension, asthma, and coronary artery disease, presented to the orthopedics clinic with complaints of acute swelling and pain in the right fifth toe. The patient had not experienced similar complaints previously. Magnetic resonance imaging revealed T2 hyperintense nodular images on the articular surfaces of the 1st and 2nd metatarsophalangeal joints of the right foot. A hyperintense mass was observed on imaging distal to the 2nd metatarsal, extending to the phalanx, disrupting the cortex, and spreading into the soft tissue. Additionally, a mass was detected in the distal phalanx of the 5th toe which destroys the bone cortex and extends into the soft tissue. To rule out malignancy, ^{18}F-fluorodeoxyglucose positron emission tomography/computed tomography (^{18}F-FDG PET/CT) was performed (A). Significant increased ^{18}F-FDG uptake was detected in bilateral intertarsal, tarsometatarsal, metatarsophalangeal, and interphalangeal joints which was more pronounced on the left side (line B, C, and D: arrows). CT images revealed destruction of the cortices of the bones adjacent to the metatarsophalangeal joint surfaces (line B, C: arrowhead), and soft tissues around the joints (line D: asterix) While active symmetric bilateral arthritis was primarily considered, no findings suggestive of malignancy were found in the other parts of the body.

^{18}F-FDG PET/CT: ^{18}F-fluorodeoxyglucose positron emission tomography/computed tomography, MIP: Maximum intensity projection

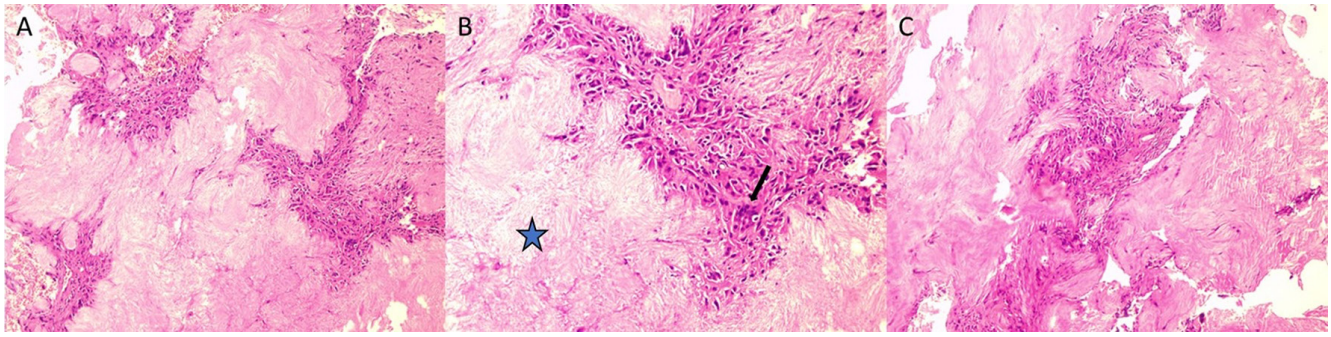

Figure 2. A biopsy was performed from the distal left 5th metatarsal and the right 5th interphalangeal joints (A, B, C: hematoxylin and eosin x 100). Amorphous, pale eosinophilic material with a nodular appearance (B: star) was observed within the fibrous tissue, surrounded by palisade-arranged histiocytes and multinucleated giant cells, (B: arrow). The biopsy result was reported as consistent with gout involvement.

^{18}F-fluorodeoxyglucose (^{18}F-FDG) is not specific to cancer. Increased ^{18}F-FDG uptake can be detected in cells involved in inflammation due to increased glucose metabolism (1). Therefore, ^{18}F-FDG is an ideal biological marker for evaluating arthritic disorders (2). In gout arthritis, moderate ^{18}F-FDG uptake can be observed in tophi, adjacent joints, and soft tissues (2,3). ^{18}F-FDG uptake is generally lower than that seen in malignant lesions (4). Polyarticular involvement of gout disease is unusual. It can mimic other rheumatological arthritis or more rarely metastatic disease on ^{18}F-FDG positron emission tomography/computed tomography (PET/CT) (1,5). Arthritic symptoms can also be caused by paraneoplastic events, such as carcinoma polyarthritis (6). However, periarticular localization observed on CT, along with juxta-articular erosive lesions that have sclerotic and protruding borders, suggests gout (7,8). In elderly men who undergo ^{18}F-FDG PET/CT imaging to rule out malignancy, as in our case, focal ^{18}F-FDG uptake due to gouty arthropathy should be considered. There are limited data in the literature showing the benefits of functional imaging in gouty arthropathy. Excluding malignancy and early detection of the disease with ^{18}F-FDG PET/CT can lead to earlier treatment and improved patient outcomes.

Ethics

Informed Consent: The written and verbal informed consent was obtained from the patient.

Footnotes

Authorship Contributions

Surgical and Medical Practices: Z.N.T., E.A., Concept: A.N.T.Y., E.A., E.A., Design: G.A., E.A., Data Collection or Processing: Z.N.T., E.A., Analysis or Interpretation: A.N.T.Y., E.A., G.A., Literature Search: Z.N.T., G.A., E.A., Writing: E.A.

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References

1. Kwee TC, de Klerk JMH, Nix M, Heggelman BGF, Dubois SV, Adams HJA. Benign bone conditions that may be FDG-avid and mimic malignancy. Semin Nucl Med. 2017;47:322-351.
2. Carey K, Saboury B, Basu S, Brothers A, Ogdie A, Werner T, Torigian DA, Alavi A. Evolving role of FDG PET imaging in assessing joint disorders: a systematic review. Eur J Nucl Med Mol Imaging. 2011;38:1939-1955.
3. Davies J, Riede P, van Langevelde K, Teh J. Recent developments in advanced imaging in gout. Ther Adv Musculoskelet Dis. 2019;11:1759720X19844429.
4. Parathithasan N, Lee WK, Pianta M, Oon S, Perera W. Gouty arthropathy: review of clinico-pathologic and imaging features. J Med Imaging Radiat Oncol. 2016;60:9-20.
5. Jamar F, van der Laken CJ, Panagiotidis E, Steinz MM, van der Geest KSM, Graham RNJ, Gheysens O. Update on imaging of ınflammatory arthritis and related disorders. Semin Nucl Med. 2023;53:287-300.
6. Rybak LD, Rosenthal DI. Radiological imaging for the diagnosis of bone metastases. Q J Nucl Med. 2001;45:53-64.
7. Ito K, Minamimoto R, Morooka M, Kubota K. A case of gouty arthritis to tophi on 18F-FDG PET/CT imaging. Clin Nucl Med. 2012;37:614-617.
8. Weaver JS, Vina ER, Munk PL, Klauser AS, Elifritz JM, Taljanovic MS. Gouty arthropathy: review of clinical manifestations and treatment, with emphasis on ımaging. J Clin Med. 2021;11:166.