

Extra-Articular Inflammatory Sites Detected by F-18 FDG PET/CT in a Patient With Rheumatoid Arthritis

Dalton Alexandre dos Anjos, MD, Georges Ferreira do Vale, MD, Cejana de Mello Campos, MD, Leonardo Fonseca Monteiro do Prado, MD, Alaor Barra Sobrinho, MD, Alexandre Lima Rodrigues da Cunha, MD, and Anna Carolina Moraes Santos, MD

Abstract: Rheumatoid arthritis is a chronic inflammatory autoimmune disease whose etiology is still unknown. Extra-articular manifestations are not uncommon. F-18 fluoro-2-deoxyglucose (F-18 FDG) positron emission tomography combined with computed tomography (PET/CT) is a useful tool to assess neoplastic diseases. However, some inflammatory conditions may also show high F-18 FDG uptake. We report a symptomatic rheumatoid arthritis patient showing marked F-18 FDG uptake in subcutaneous nodules, and cervical, supraclavicular, axillary, and pelvic lymph nodes. Detection of extra-articular inflammatory sites may improve our knowledge about inflammatory disorders of unknown etiology, and will certainly improve their management in the future. F-18 FDG PET/CT false-positives results for malignancy may be avoided in patients with rheumatoid arthritis.

Key Words: F-18 FDG PET/CT, imaging, rheumatoid arthritis, inflammation, false-positive

(*Clin Nucl Med* 2010;35: 540–541)

Received for publication November 3, 2009; revision accepted January 21, 2010. From the Department of Nuclear Medicine and Radiology, Instituto de Medicina Nuclear e Endocrinologia de Brasília (IMEB), Brasília, Brazil.

The authors state that there was no funding received for this work from any organization.

Reprints: Dalton Alexandre dos Anjos, MD, SHLS 716, Centro Clinico Sul, Torre 2, Sala T0223, Brasília DF, Brazil 70390–700. E-mail: dalton@imeb.com.br.

Copyright © 2010 by Lippincott Williams & Wilkins
ISSN: 0363-9762/10/3507-0540

REFERENCES

1. Haraoui B. Assessment and management of rheumatoid arthritis. *J Rheumatol Suppl.* 2009;82:2–10.
2. Nishimura K, Sugiyama D, Kogata Y, et al. Meta-analysis: diagnostic accuracy of anti-cyclic citrullinated peptide antibody and rheumatoid factor for rheumatoid arthritis. *Ann Intern Med.* 2007;146:797–808.
3. Smolen JS, Aletaha D. Developments in the clinical understanding of rheumatoid arthritis. *Arthritis Res Ther.* 2009;11:204.
4. Fletcher JW, Djulbegovic B, Soares HP, et al. Recommendations on the Use of F-18 FDG PET in Oncology. *J Nucl Med.* 2008;49:480–508.
5. Jhanwar YS, Straus DJ. The role of PET in lymphoma. *J Nucl Med.* 2007;48:1626–1632.
6. Cook GJ. Pitfalls in PET/CT interpretation. *Q J Nucl Med Mol Imaging.* 2007;51:235–243.
7. Metser U, Even-Sapir E. Increased (18)F-fluorodeoxyglucose uptake in benign, nonphysiologic lesions found on whole-body positron emission tomography/computed tomography (PET/CT): accumulated data from four years of experience with PET/CT. *Semin Nucl Med.* 2007;37:206–222.
8. Rosenbaum SJ, Lind T, Antoch G, et al. False-positive FDG PET uptake—the role of PET/CT. *Eur Radiol.* 2006;16:1054–1065.
9. Kostakoglu L, Hardoff R, Mirtcheva R, et al. PET-CT fusion imaging in differentiating physiologic from pathologic FDG uptake. *Radiographics.* 2004;24:1411–1431.
10. Beckers C, Ribbens C, André B, et al. Assessment of disease activity in rheumatoid arthritis with (18)F-FDG PET. *J Nucl Med.* 2004;45:956–964.
11. Seldin DW, Habib I, Soudry G. Axillary lymph node visualization on F-18 FDG PET body scans in patients with rheumatoid arthritis. *Clin Nucl Med.* 2007;32:524–526.

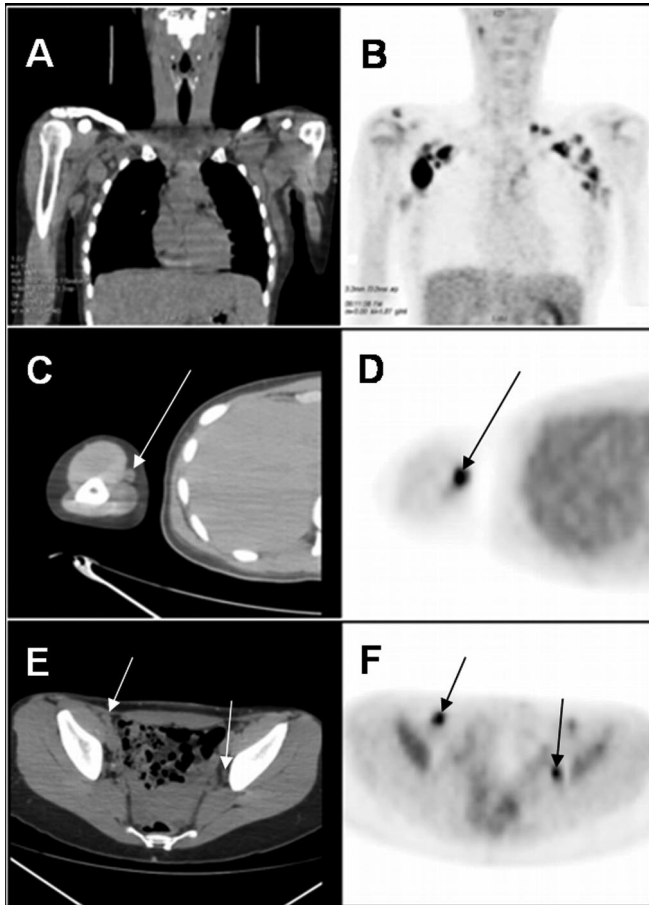


FIGURE 1. Restaging F-18 fluoro-2-deoxyglucose positron emission tomography/computed tomography (F-18 FDG PET/CT) study of a 28-year-old woman with a history of papillary thyroid carcinoma. She presented with weight loss and palpable nodes in the neck and supraclavicular regions for 6 months. Total thyroidectomy and radioiodine ablation (3.7 GBq) were performed 9 years ago. Recent I-131 whole-body scan was negative and serum thyroglobulin levels were undetectable. She complained of hands and wrists symmetrical polyarthralgia and morning stiffness for 2 years. Laboratory tests revealed high inflammatory markers, positive rheumatoid factor, and high levels of anticyclic citrullinated peptide antibodies, which confirmed the rheumatoid arthritis hypothesis.^{1–3} Coronal and axial views on PET/CT show markedly increased F-18 FDG uptake in cervical, supraclavicular, and axillary lymph nodes (panels A and B); right arm subcutaneous node (panels C and D); and pelvic lymph nodes (panels E and F). Based on clinical criteria and image findings,^{4,5} a second malignancy hypothesis became the most likely. However, the right axillary lymph node biopsy revealed benign lymphoid hyperplasia. After treatment with leflunomide, aceclofenac, and deflazacort, the patient showed marked clinical improvement with pain relief and palpable node volume reduction.

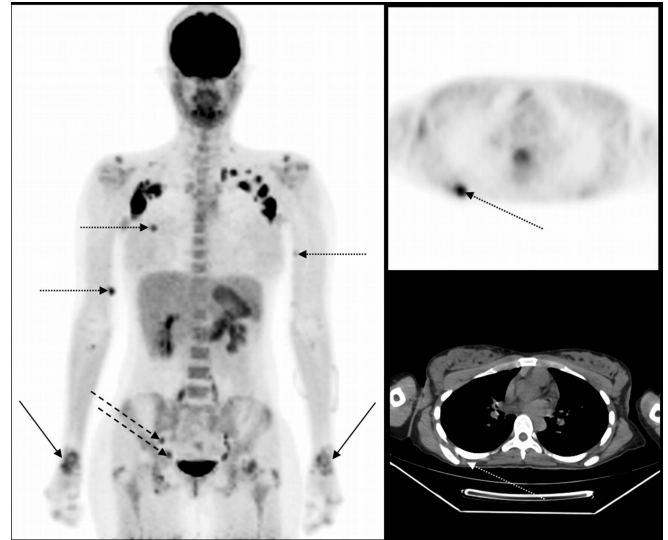


FIGURE 2. A number of benign conditions have been described as showing F-18 FDG uptake that may be mistaken for malignancy.^{6–9} This case illustrates the possibility of F-18 FDG PET/CT false-positive results in patients with rheumatoid arthritis. Previous studies had already demonstrated F-18 FDG uptake in joints and axillary lymph nodes of rheumatoid arthritis patients.^{10,11} Maximum intensity projection image of PET (left) shows F-18 FDG uptake in the wrist joints (solid arrows), arms, dorsal subcutaneous nodules (dotted arrows), and extra-axillary lymph nodes (dashed arrows). Axial views on PET (upper image) and CT (lower image) show the dorsal subcutaneous nodule. The presence of symmetrical uptake in the wrist joints is the sign that should alert the physician to the possibility of benign lymphoid hyperplasia in patients with rheumatoid arthritis.