

Rheumatoid Arthritis with Generalized Lymphadenopathy Mimicking Lymphoma on Positron Emission Tomography/Computed Tomography with ¹⁸F-Fluorodeoxyglucose

Abstract

A 42-year-old male presented with weight loss and progressively increasing pain and swelling in joints over the past 3 months. Contrast-enhanced computed tomography (CT) demonstrated pleuropulmonary opacities and supra/infradiaphragmatic lymph nodes enlargement. Positron emission tomography (PET/CT) with ¹⁸F-fluorodeoxyglucose showed intensely increased tracer uptake in joints, in pulmonary opacities, as well as in thoracic, iliac, and inguinal nodes. On suspicion of lymphoma with synovial involvement, he was submitted to lymph node and synovial biopsy, which revealed reactive follicular lymphadenopathy and synovium inflammatory changes, respectively. Rheumatoid factor resulted increased, and thus, diagnosis of rheumatoid arthritis with related lung and lymph node involvement was made.

Keywords: ¹⁸F-fluorodeoxyglucose, inflammation, lymphoma, positron emission tomography/computed tomography, rheumatoid arthritis

Aside its well-established role in oncology, nuclear medicine is routinely applied for imaging of infection and inflammatory diseases.^[1,2] Inflammatory cells, such as macrophages and lymphocytes, show high ¹⁸F-fluorodeoxyglucose (¹⁸F-FDG) uptake, and therefore, positron emission tomography/computed tomography (PET/CT) has been utilized for the diagnosis and follow-up of several phlogistic conditions, including vasculitis and sarcoidosis.^[3] Concerning rheumatoid arthritis, ¹⁸F-FDG PET/CT proved useful to determine disease severity and to monitor response to treatment.^[4]

Here, we report the case of a 42-year-old male who presented to our hospital with pain and swelling in both large and small joints, associated with weight loss over the past 3 months, and enlarged axillary and inguinal lymph nodes. He was submitted to contrast-enhanced CT that showed bilateral pulmonary opacities and enlarged lymph nodes, some of whom with supraclavicular, thoracic, and axillary regions, as well as along iliac and inguinal axis. PET/CT with ¹⁸F-FDG showed increased tracer uptake in large

and small joints, in some pericentimeteric bilateral pleuropulmonary opacities, and in enlarged supra/infradiaphragmatic lymph nodes [Figure 1]. On suspicion of lymphoma with synovial involvement, the patient was submitted both to lymph node and synovial biopsy. Histology of one thoracic node revealed reactive follicular lymphadenopathy, thus excluding lymphoma, and biopsy of the knee synovium demonstrated inflammatory changes, mostly consisting of epithelial erosion, fibrin, and neutrophil depositions [Figure 2]. Considering the histological results, circulating level of rheumatoid factor (r.f.) was analyzed and returned increased values (372 IU/L, r.f. <30 IU/L). Therefore, diagnosis of rheumatoid arthritis with related lung involvement and lymphadenopathy was made. Treatment with prednisolone 25 mg b.i.d. was started with subsequent patient's clinical benefit.

Enlarged lymph nodes are not rare in rheumatoid arthritis. In a cohort of 100 hospitalized patients, the overall frequency of enlarged and palpable lymph nodes resulted in 82% of subjects, being the axillary region the most common location. Of note, lymphadenopathy was found

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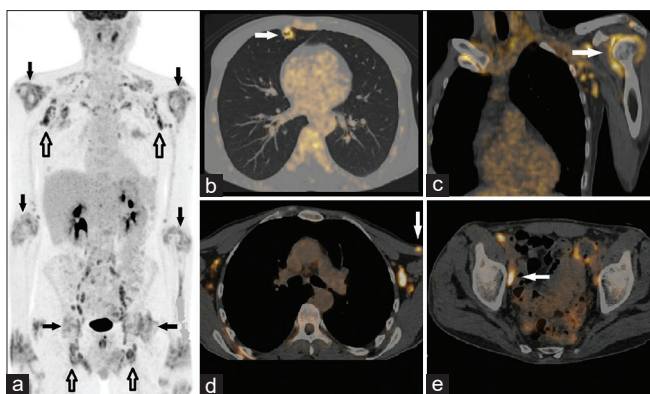


Figure 1: Maximum intensity projection demonstrated intense tracer uptake in joint (black arrows) and in supra/infradiaphragmatic lymph nodes (black bordered arrows) (a). Fused corresponding positron emission tomography/computed tomography axial slices showed increased ¹⁸F-fluorodeoxyglucose incorporation corresponding to sub-solid pulmonary lesion (b, arrow), synovial recesses as evident in the left shoulder (c, arrow), axillary and thoracic lymph nodes, some of whom with rounded morphology (d, white arrow), and in the iliac nodes, particularly in the right side (e, arrow)

associated with the grade of disease activity, being less evident in subjects under steroid therapy.^[5] Furthermore, it has been reported that patients with rheumatoid arthritis present an increased risk, compared to general population, of developing both Hodgkin's lymphoma (HL) and non-HL (NHL).^[6] The link between rheumatoid arthritis and lymphoma has not been fully understood yet; likely, a combination of factors, such as genetic predisposition and continuative immune stimulation, is involved in the pathogenesis.^[6] On the other hand, it must be highlighted that, although rare, synovial involvement has been described in patients affected by NHL.^[7] Whole-body ¹⁸F-FDG PET/CT is routinely applied for the evaluation of HL and NHL, both for staging and evaluation of response to treatment. In our patient, the highly increased tracer incorporation in multiple lymph nodes, associated also with altered rounded morphology, raised the suspicion of ¹⁸F-FDG-avid lymphoma with diffuse synovial involvement that was, however, subsequently excluded by pathology.

The case reported here underscores that generalized lymphadenopathy in patients affected by RA may mimic lymphoma on PET/CT with ¹⁸F-FDG.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that his name and initials will not be published and due efforts

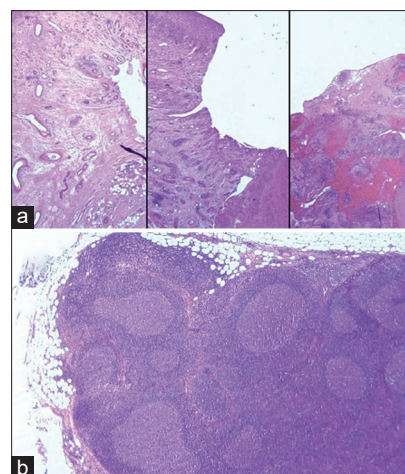


Figure 2: Synovium showing inflammatory changes mostly consisting of epithelial erosion, fibrin and neutrophil depositions, increased vascularity, perivascular lymphocytes, plasma cells, and macrophages (a). Section of lymph node showing hyperplastic follicles with prominent germinal centers (b)

will be made to conceal identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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