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LETTER TO THE EDITOR OPEN ACCESS

High 18F-FDG Uptake in Benign Pathologies: A Challenge in Oncological PET/CT Imaging

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To the editor,

Since 18F-FDG accumulation can also be seen in benign pathologies (1), it may be challenging to differentiate them from malignant tumours. For instance, in daily oncological PET/CT practice, increased FDG uptake can co-incidentally be detected in tuberculous lymph nodes, fungal infections of the liver, Nocardia abscess of the neck, intracranial and intraabdominal bacterial abscesses, bone infections, sarcoidosis, pneumoconioses, amyloidosis, autoimmune diseases of the thyroid, thymic hyperplasia, gastritis, esophagitis, acute cholangitis and cholecystitis, pericarditis, thrombus in superior vena cava, diverticulum of the urinary bladder, Paget's disease, bone marrow of anemic patients due to hyperplasia, and inflammatory changes within atheromatous plaques of the aorta and other large arteries; besides benign tumours such as pleomorphic adenoma of the parotid gland, uterine fibroids, adenoma of the thyroid, fibrous mesothelioma, colonic polyps, hypophyseal adenoma, surrenal adenoma, fibrous dysplasia, neurofibroma, enchondroma, aneurysmal bone cyst, giant cell tumour of bone, and cystadenoma in the ovary (2–4). To make the diagnosis more complicated in oncology patients, inflammatory changes after chemotherapy, postoperative scars during healing process such as abdominal fibrosis, sternal uptake after coronary bypass, recent laminectomies, hematoma after excisional biopsies, ostomies, tube or catheter insertions and post-radiation changes (radiation pneumonitis etc.) can also cause 18F-FDG accumulation (2). In patients who would undergo oncological PET/CT imaging, 18F-FDG uptake can be seen in co-incidental pancreatitis (5). In children, bone lesions including tumours like osteoid osteoma, chondroblastoma, nonossifying fibroma, Langerhans cell histiocytosis, traumas such as bone fractures, and infectious diseases like osteomyelitis or prosthetic joint infection can present with increased 18F-FDG uptake. Also regarding the pediatric patients, focally increased 18F-FDG uptake can be demonstrated in many other inflammatory and/or infectious pathologies including abscesses, inflammatory bowel diseases, granulomatous

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diseases/infections, fungal infections (aspergillosis etc.), pneumonia, sinusitis and injection site granulomas after subcutaneous (i.e. heparin) or intramuscular drug administra-tions (6).

Though 18F-FDG uptake due to benign pathologies is usually less than that of the malignant tumours, some overlap can occur between these two distinct entities (2). In order to differentiate benign FDG uptake from malignant, the image interpreter should get a detailed patient history (surgical and clinical history, previous and recent therapies, history of trauma etc.) and evaluate all the previously obtained radiological and scintigraphic images of the patient (1,2). In case of a need, laboratory tests and/or other imaging methods such as ultrasonography and MRI should be performed, in accordance with other disciplines. Stability of these lesions on follow-up scans is an important clue for benignity (3).

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