

## Incidental inflammatory findings in nerves and in patients with neoplastic diseases evaluated by $^{18}\text{F}$ -FDG-PET/CT

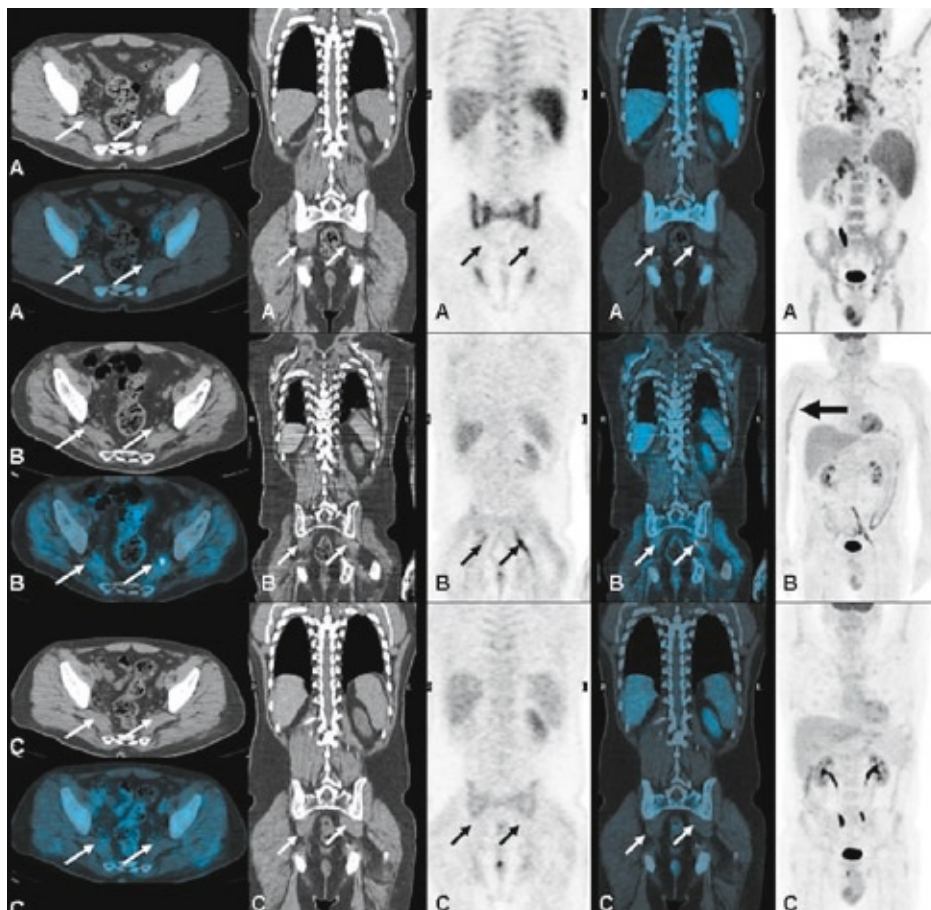
**To the Editor:** Fluoro-18-fluorodeoxyglucose-positron emission tomography/computed tomography ( $^{18}\text{F}$ -FDG-PET/CT) allows tissue metabolism, perfusion evaluation of various lesions. Furthermore,  $^{18}\text{F}$ -FDG is taken up by neoplastic cells because many of these cells have increased glucose metabolic activity [1-4]. False positive findings are mainly due to inflammatory processes, radiotherapy, chemotherapy, granulomatous processes e.g. sarcoidosis [5], fungal disease, mycobacterial disease, lymphadenitis etc. [6] because  $^{18}\text{F}$ -FDG also accumulates in inflammatory cells like neutrophils, lymphocytes and macrophages [7-10].

We report two cases of patients studied for neoplastic disease by  $^{18}\text{F}$ -FDG-PET/CT in which we noticed inflammatory lesions. The PET images were analyzed visually and semi-quantitatively using the standardized uptake value (SUV) and reconstruction was performed in a 128x128 matrix and 60cm field of view (Discovery ST tomograph, General Electric, USA). Patients gave written consent to perform the study.

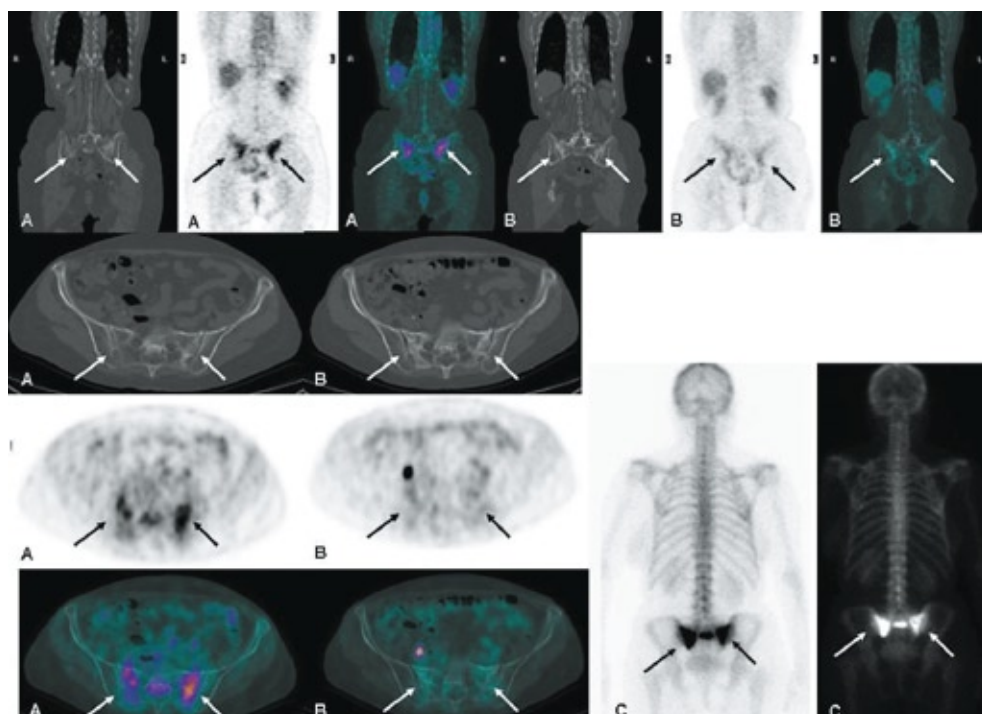
The first case was a 52 years old male affected by non Hodgkin's lymphoma (NHL) who underwent restaging by  $^{18}\text{F}$ -

FDG-PET/CT that was negative for neoplastic lesions but showed pathologic uptake in the left sciatic nerve and the right brachial nerve area (Fig. 1A, B). This finding was not present in previous  $^{18}\text{F}$ -FDG-PET/CT studies and was considered to be due to an inflammatory process as the clinical pattern was characteristic with pain in the left leg and both arms. The patient also had palpebral ptosis. There was mild increase of C-reactive protein (CRP) and erythrocyte sedimentation rate (ESR). The  $^{18}\text{F}$ -FDG-PET/CT scan performed after anti-inflammatory treatment with ketoprofen showed a reduction of pathologic uptake on both sites (Fig. 1C). Sciatic nerve involvement has been described in patients affected by diffuse large B-cell lymphoma, neurolymphomatosis [11] and endoneural sciatic nerve invasion by uterine cervical epidermoid cancer [12]. However, to our knowledge, there are no data in the literature regarding the detection of signs of nerve inflammation by  $^{18}\text{F}$ -FDG-PET/CT.

The second case is a 52 years old female patient affected by endometrial uterine sarcoma treated by surgery in 2003. The clinical and radiological follow-up was negative until



**Figure 1.**  $^{18}\text{F}$ -FDG-PET/CT at staging of NHL (A), during follow-up identifying sciatic nerves inflammation (B - arrows) and after anti-inflammatory therapy (C - arrows). Notice the uptake at the right brachial nerve (B - right image - big arrow).



**Figure 2.** The  $^{18}\text{F}$ -FDG-PET/CT image shows high uptake at the sacro-iliac joints (A) and also high uptake at bone scintigraphy (C). After treatment, PET showed no uptake (B).

January 2007 when  $^{18}\text{F}$ -FDG-PET/CT revealed increased pathologic uptake at the sacro-iliac joints (Fig. 2A). A 3-phase and total body bone scan by technetium-99m methylene diphosphonate ( $^{99\text{m}}\text{Tc}$ -MDP) (Fig. 2C) was performed, that was positive in all phases and revealed high delayed uptake at the sacro-iliac joints suggesting sacroileitis. The patient was symptomatic reporting low back pain and diffuse pain at the thighs. Elevation of CRP and ESR were also found. After anti-inflammatory treatment with diclofenac, another  $^{18}\text{F}$ -FDG-PET/CT scan revealed a normal uptake at the sacro-iliac joints (Fig. 2B). Sacro-ileitis is an inflammatory disease usually diagnosed by 3-phase bone scan and CT. To our knowledge, no data are available about identification of this pathology by  $^{18}\text{F}$ -FDG-PET/CT.

Incidental inflammatory findings revealed in patients with neoplastic diseases are not frequent and may be diagnosed by  $^{18}\text{F}$ -FDG-PET/CT as not false positive findings.

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