^{18}F-FDG PET/CT imaging of massive portal vein tumor thrombosis from ileal adenocarcinoma

Abstract

A 72 years old patient was referred to us with ileal adenocarcinoma after surgical desection. Fluorine-18-fluorodeoxyglucose positron emission tomography/computed tomography (^{18}F-FDG PET/CT) imaging showed massive portal vein, tumor thrombosis. Clinical examination and laboratory tests did not support the diagnosis of septic thrombus. To the best of our knowledge, this is the first reported case in the literature of a massive tumor thrombus in the right portal system from ileal carcinoma, detected by ^{18}F-FDG PET/CT.

Hell J Nucl Med 2014; 17(1): 52-53 *Epub ahead of print: 25 February 2014* *Published online: 27 March 2014*

Case Report

A 72 years old patient was referred to us 1 month later that he had undergone emergency surgery for a stenosing terminal ileal adenocarcinoma [1]. He had not received chemotherapy. Positron emission tomography/computed tomography (PET/CT) scan was acquired 60min after the intravenous administration of 3.7kBq/kg of fluorine-18-fluorodeoxyglucose (^{18}F-FDG). The PET/CT device was a Discovery ST (GE, Milwalkee, USA) with bismuth germanate crystal units arranged to form 24 rings combined with a 16-slice Light Speed Plus CT scanner. Maximum intensity projection (MIP) whole body scan (Fig. 1A) showed high tracer uptake in mediastinal and abdominal lymph nodes, correlated to tumoral localizations. Moreover, intense ^{18}F-FDG uptake (SUV_{max}=20.9) was noted in the right portal vein system (Fig. 1A), also evident in the coronal slices (Fig.1B). Subsequently performed CT, showed almost complete filling defect of the right portal vein and its distal branches (Fig. 2A). No evidence of disease recurrence was appreciated at the surgical ileal anastomosis (Fig. 2B). Moreover, CT demonstrated active enhancement of the portal thrombus material with significant increase of attenuation values between the scan without contrast material (33 HU) and the one in the portal venous phase (66 HU) (Fig. 2C and D). These features were interpreted as tumour invasion

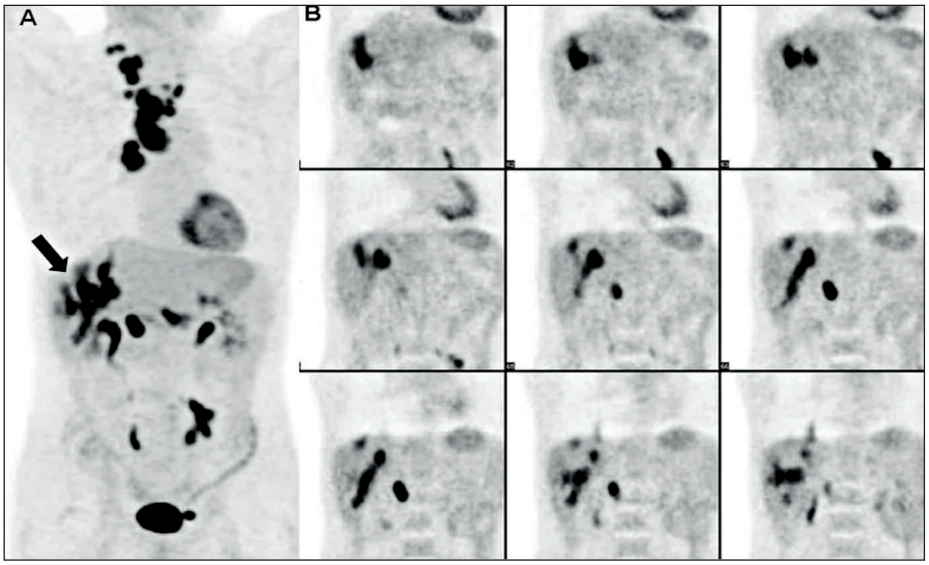

Figure 1. Whole body PET/CT, showed intense ^{18}F-FDG uptake in the mediastinal and abdominal lymph nodes due to tumor localization, also revealed intense tracer accumulation (SUVmax= 20.9) in the in the right portal vein system (A, arrow), also evident in the coronal slices (B).

Oreste Bagni[1] MD,
Luca Filippi[1] MD,
Giuseppe Pelle[2] MD,
Francesco Scopinaro[3] MD

1. PET/CT Unit, Nuclear Medicine Department and
2. Radiology Departiment, Santa Maria Goretti Hospital, Latina, Italy,
3. Section Nuclear Medicine, Sant'Andrea Hospital, Via di Grottarossa 1035/1039, 00189 Rome

Keywords: Portal vein thrombosis
- Ileal adenocarcinoma
- Tumor thrombus
- ^{18}F-FDG PET/CT

Correspondence address:
Oreste Bagni MD
Section of Nuclear Medicine, Santa Maria Goretti Hospital, via Canova, 04100 Latina, Italy.
Email: obagni1@virgilio.it

Received:
13 February 2014
Accepted revised:
1 March 2014

in the portal branch due to the ^{18}F-FDG uptake at PET scan. Physical examination demonstrated mild pain in the right quadrants of the abdomen while all laboratory tests were normal, except (hemoglobin: 8.9g/dL) and increased erythrocyte sedimentation rate (80mm/1st h). Patient started chemotherapy according to standard protocol, with complete resolution of the abdominal painful symptoms. Intraluminal tumor thrombi in the portal vein system originating from gastrointestinal tract cancer represent a rare condition. Tanaka et al. (2002) [2] reported a total of 5 patients with gastric or large intestinal cancer with portal vein tumor thrombus. Thrombus including tumoral cells exhibits increased tracer uptake while venous thromboses present normal ^{18}F-FDG biodistribution [3, 4]. Yamamoto et al (2011) [5] recently described a case of massive portal vein tumor thrombus from colorectal cancer without any metastatic nodules in the liver, showing positive ^{18}F-FDG uptake in the right hepatic lobe. In our case, clinical examination and laboratory tests did not support the diagnosis of septic thrombus [6]. To the best of our knowledge, this is the first reported case in the literature of a massive tumor thrombus in the right portal system from ileal carcinoma, detected by ^{18}F-FDG PET/CT.

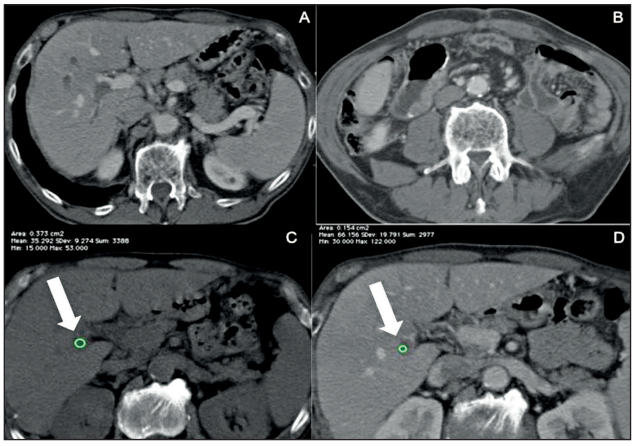

Figure 2. Multidetector CT (MDCT) showed extensive nearly complete thrombosis of the right portal vein system (A) and ileal surgical anastomosis in the upper right abdomen (B). Increase of attenuation values before (33 HU, C, arrow) and after contrast media injection (66 HU, portal phase) demonstrated active thrombus enhancement (D, arrow).

The authors declare that they have no conflicts of interest.

Bibliography

1. Grandić L, Pogorelić Z, Prusac IK et al. An unusual cause of the ileus: non-specific stenosing ulceration of the small intestine. *Coll Antropol* 2012; 36: 1457-60.
2. Tanaka A, Takeda R, Mukaihara S et al. Tumor thrombi in the portal vein system originating from gastrointestinal tract cancer. *J Gastroenterol* 2002; 37(3): 220-8.
3. Sharma P, Kumar R, Singh H et al. Imaging thrombus in cancer patients with FDG PET-CT. *Jpn J Radiol* 2012; 30(2): 95-104.
4. Lee EY, Khong PL. The value of ^{18}F-FDG PET/contrast-enhanced CT in detection of tumor thrombus. *Clin Nucl Med* 2013; 38(2): e60-5.
5. Yamamoto N, Sugano N, Morinaga S et al. Massive portal vein tumor thrombus from colorectal cancer without any metastatic nodules in the liver parenchyma. *Rare Tumors* 2011; 3(4): e47.
6. Miceli M, Atoui R, Walker R et al. Diagnosis of deep septic thrombophlebitis in cancer patients by fluorine-18 fluorodeoxyglucose positron emission tomography scanning: a preliminary report. *J Clin Oncol* 2004; 22: 1949-56.