A Rare Case of Malignant Granular Cell Tumor of the Colon Incidentally Detected by ^{18}F -FDG Positron Emission Tomography/Computed Tomography

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We report an unusual case of malignant granular cell tumor (GCT) of the colon incidentally detected by Fluorine-18-Fluorodeoxyglucose positron emission tomography/computed tomography (^{18}F -FDG-PET/CT) in a 54-year-old female patient with history of

pulmonary adenocarcinoma. ^{18}F -FDG-PET/CT showed an area of increased radiopharmaceutical uptake, corresponding to a 3 cm nodule in the caecum. Based on PET/CT findings, the patient underwent endoscopic resection of the colonic lesion. Histology demonstrated the presence of a malignant GCT of the colon (Figs. 1 and 2).

GCT is a rare tumor of neural origin that occurs in the fourth to sixth decade of life. Although most of these tumors are benign, 1–3 % of all GCTs are malignant [2, 3]. GCTs usually present as solitary painless nodules in the dermis or subcutaneous tissues. They can also be found in internal organs including the larynx, bronchus and gastrointestinal tract [2]. Colonic GCT is mostly found incidentally during colonoscopy or surgical resection as a solitary submucosal sessile nodule, although, some lesions may cause rectal bleeding [2].

The role of ^{18}F -FDG-PET and PET/CT in patients with GCTs localized in various anatomic sites was reported by few articles in the literature [4–8]. A case of benign GCT of the colon detected by ^{18}F -FDG-PET/CT has been recently described by Oh et al., and maximum standardized uptake value was 9.1 [8]. To the best of our knowledge, this is the first case of a malignant GCT of the colon incidentally detected by ^{18}F -FDG-PET/CT described in the literature. In particular, as in our case, ^{18}F -FDG-

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Fig. 1 A 54-year-old female with previous history of pulmonary adenocarcinoma surgically treated underwent ^{18}F -FDG-PET/CT for restaging due to the increased tumor markers levels. Before ^{18}F -FDG injection, the patient had fasted for at least 6 hours; at the time of the radiopharmaceutical injection, the patient presented glucose blood levels corresponding to 96 mg/dL. Images were acquired one hour after intravenous injection of 280 MBq of ^{18}F -FDG according to the body mass index. The unenhanced CT scan was performed from the skull base to the inguinal region with a voltage of 120 KeV and tube current of 30 mA. This scan was used for the

anatomic localization and the attenuation correction of PET data. PET scan was acquired in 3D mode (multiple bed positions, 3 min for each bed position). Iterative reconstruction and CT-based attenuation correction were used. Whole-body maximum intensity projection (MIP) PET image (A) showed a focal area of increased radiopharmaceutical uptake in the abdomen (arrow). ^{18}F -FDG-PET (B–D), CT (E–G) and fused PET/CT (H–J) images in axial, sagittal and coronal projection showed a focal area of increased radiopharmaceutical uptake (maximum standardized uptake value: 5.8) corresponding to a 3 cm nodule in the caecum (arrows)

Fig. 2 Based on the PET/CT findings, the patient underwent colonoscopy and endoscopic resection of the colonic lesion. Low-power microphotograph (A; hematoxylin and eosin: magnification x20) showed the lesion in the wall of the large bowel covered by colonic mucosa and submucosa (top left). At higher magnification, the lesion appeared composed of cells with eosinophilic cytoplasm finely to coarsely granular, mostly spindled in shape (B; hematoxylin and eosin: magnification x100), although focally rounded or polygonal (C; hematoxylin and eosin: magnification x400); tumor cells often displayed a high nucleocytoplasmic ratio, vesicular nuclei with prominent nucleoli, and pleomorphism (D; hematoxylin and eosin: magnification x400). The lesional morphology was typical of a GCT. The diffuse spindling, together with the frequently detected high nucleocytoplasmic ratio, vesicular nuclei with prominent nucleoli, and pleomorphism qualify the lesion as a malignant GCT [1]

PET/CT may allow the correct identification and metabolic assessment of a rare malignant and asymptomatic tumor that presented as focal area of increased ^{18}F -FDG uptake in the colon [9].

Conflicts of interest None.

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