

Interesting images

Bone and peritoneal metastasis of breast carcinoma: findings on fluorine-18 fluorodeoxyglucose positron emission tomography/computed tomography

Metástasis óseas y peritoneal de carcinoma de mama: hallazgos en estudio PET/TAC con ¹⁸F-FDG

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A 56-year-old female patient with breast carcinoma was referred to Nuclear Medicine Department for FDG PET/CT examination as a part of staging before treatment. On FDG PET/CT (fig. 1), a hyperdense lesion of 17 × 13 mm in size with mild FDG uptake was shown at the inner-lower quadrant of left breast. Maximum standardized uptake value (SUVmax) was 1.22. There were also multiple bone metastases with increased FDG uptake (SUVmax: 9.78). After the imaging she was treated with chemotherapy and radiotherapy. Three weeks after chemotherapy and 7 months after radiotherapy, she re-presented to our department for restaging and she had abdominal pain for one week. Figure 2 illustrates the FDG PET/CT images after therapy. A mass of 28 mm in diameter with increased FDG uptake (SUVmax: 3.29) at the inner-lower quadrant of left breast and precarinal, subcarinal and left hilar lymphadenopathies with increased FDG uptake (SUVmax: 6.06) were depicted. Moreover, axillary lymph node with mild increased metabolic activity (SUVmax: 2.12), a solid nodule with a diameter of 24 mm at the right anterior lobe of liver with increased metabolic activity (SUVmax: 6.17) and multiple mixed lytic/sclerotic bone metastases were detected. Additionally, multiple nodular masses at the omentum with increased metabolic activity (SUVmax: 6.0) were noticed (Omental cake). A clear progression was seen in FDG PET/CT findings comparing to FDG PET/CT imaging before treatment.

Peritoneal spreading of tumors can be developed by hematogenous, lymphatic or direct invasion¹. Tumor cells may be seen microscopically in ascitis in the early stage of diseases. By the later stages, spreading along parietal peritoneum and reaches to visceral peritoneum, the appearance of omental or mesenteric cake may be imaged¹. The sensitivity of FDG PET imaging in detection of peritoneal metastases varies between 30-66%. The sensitivity and positive predictive value increases in peritoneal disease by using

the combination of PET and CT. FDG PET/CT has the potential to improve detection of peritoneal carcinomatosis as lesion conspicuity is high at PET due to low background activity². In a study by Dirisamer et al³ ¹⁸F-FDG PET/multidetector computed tomography is able to detect more lesions in peritoneal seeding than ¹⁸F-FDG and multidetector computed tomography alone. Furthermore, it provides information on the anatomical site, which is a major benefit for the planning of surgical interventions. However, while they are used alone, both PET or CT are not effective imaging methods for detecting peritoneal spreading of disease. If peritoneal biopsy or pathological diagnosis is impossible, PET/CT is a feasible imaging method in peritoneal disease. FDG PET/CT may give additional information to other imaging methods in the staging of peritoneal carcinomatosis.

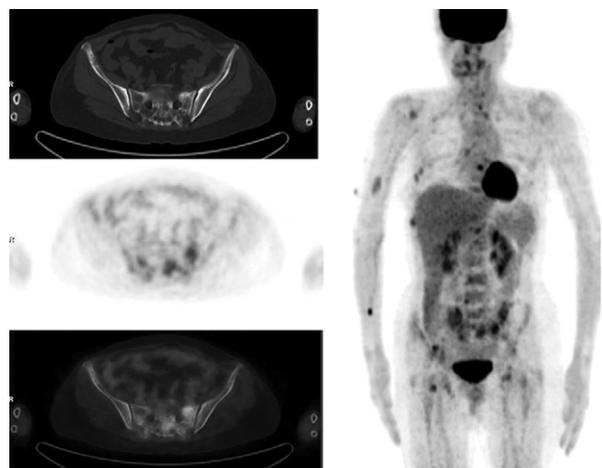


Figure 1. FDG PET/CT was performed as a part of staging before treatment in a 56-year-old female patient with breast carcinoma. Multiple bone metastases with increased FDG uptake (SUVmax: 9.78) were shown.

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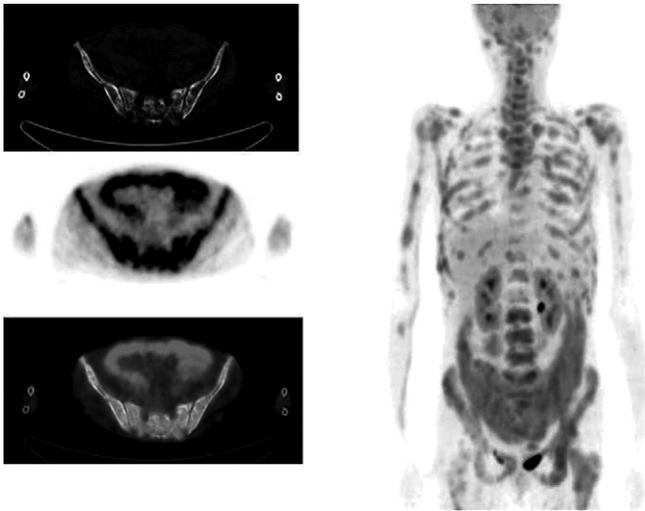


Figure 2. FDG PET/CT after treatment. A clear progression was seen in FDG PET/CT findings comparing to FDG PET/CT imaging before treatment. Multiple nodular masses at the omentum with increased metabolic activity were noticed (Omental cake).

References

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