IMAGING CORNER

Ascites in Breast Cancer: Progression from Negative Cytology to Avid Peritoneal Involvement

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Abstract
Malignant ascites is caused by various factors such as lymphatic obstruction, increased vascular permeability and immune response. It presents a significant clinical challenge to the treating physicians considering limited treatment options resulting in increased morbidity and mortality. It is mostly associated with gastrointestinal, gynaecological, breast, hepatobiliary, and lung carcinomas. Paracentesis is usually important in determining the quantity and etiology of ascites. However, unlike conventional radiological imaging, ^{18}F-FDG PET-CT can act as an early pointer towards its diagnosis. We present a case of breast ovarian syndrome highlighting the utility of hybrid nuclear imaging in solving this diagnostic dilemma.

Keywords: Malignant ascites, breast cancer, cytology.

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Discussion
A 35-year-old woman with large volume ascites, bilateral adnexal masses, and osseous lesions on CT was referred for PET-CT scan. F18 FDG PET-CT showed avid multifocal osseous metastases [Figure A, B], non-avid bilateral pleural effusion and ascites along with avid bilateral adnexal masses [Figure C]. Repeated ascitic taps were negative for malignant cells. Biopsy from sacral lesion showed metastatic carcinoma favouring breast primary with positive CK7 and GATA3, 50% estrogen receptor, 40% progesterone receptor and HER2 positivity. She then received chemotherapy (carboplatin/paclitaxel). Follow-up PET-CT showed avid peritoneal nodularity and omental thickening [Figure D]. Repeat fluid cytology revealed malignant cells confirming malignant ascites (MA). No abnormal pleural nodularity was noted [Figure E, F] at this stage. Avid residual

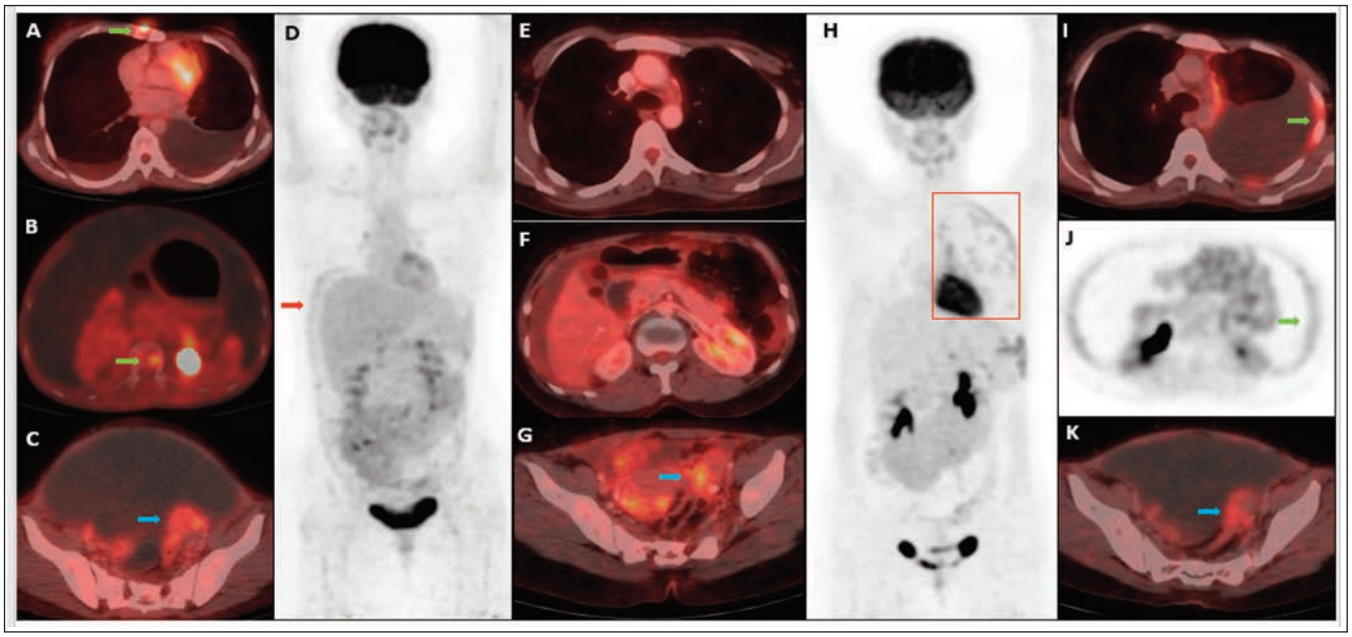

Figure: Initial ^{18}FDG PET-CT showed avid multifocal osseous metastases [Fused axial, green arrows A, B] along with avid bilateral adnexal masses [C, green arrow]. Follow-up PET/CT 2 years later showed avid peritoneal nodularity and omental thickening [Maximum intensity image, MIP; D red arrow]. Subsequent PET-CT showed no abnormal pleural nodularity however; residual avid adnexal lesions were seen [Fused axial images; E-G]. A year later, a follow-up scan revealed interval development of avid pleural nodularity [H-J red box and green arrow] and avid residual adnexal lesion [K, blue arrow].

adnexal lesions were seen [Figure G]. Subsequent imaging a year later showed avid pleural nodules [Figure H-J] along with avid residual adnexal lesions [Figure K].

Ascites in cancer mainly occurs due to peritoneal carcinomatosis, hepatic metastases, portal vein obstruction or inflammatory causes.[1] If fluid cytology shows malignant cells, it is labelled as MA. If cytology is negative, it is termed Paramalignant.[1,2] Peritoneal metastases leading to MA from breast cancer is rare;[3] more commonly seen with invasive lobular carcinoma. Our patient had breast nodules on MRI which were nonmalignant on histopathology, complicating the diagnosis. ^{18}FDG PET-CT proved crucial, identifying peritoneal and pleural involvement when other modalities were inconclusive. This case highlights the role of ^{18}FDG PET-CT in early metabolic detection of pleuroperitoneal disease and ascites. PET-CT offers higher sensitivity and specificity in detecting peritoneal metastases.[4]

References

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