Multiple metastatic small cell carcinoma with extensive tumor thrombosis in the inferior mesenteric vein on ^{18}F-FDG PET/CT

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Abstract

The presence of intravascular tumor thrombus alters the staging, prognosis, and treatment paradigms of cancer patients. It most commonly complicates renal cell carcinoma, adrenocortical carcinoma, and hepatocellular carcinoma. Small cell carcinoma is a highly aggressive malignant neoplasm; however, venous tumor thrombus associated with small cell carcinoma is extremely rare. Herein, we report the fluorine-18-fluorodeoxyglucose (^{18}F-FDG) positron emission tomography/computed tomography (PET/CT) findings in an 87-year-old woman presenting with diffuse metastatic small cell carcinoma and superior mesenteric vein tumor thrombosis.

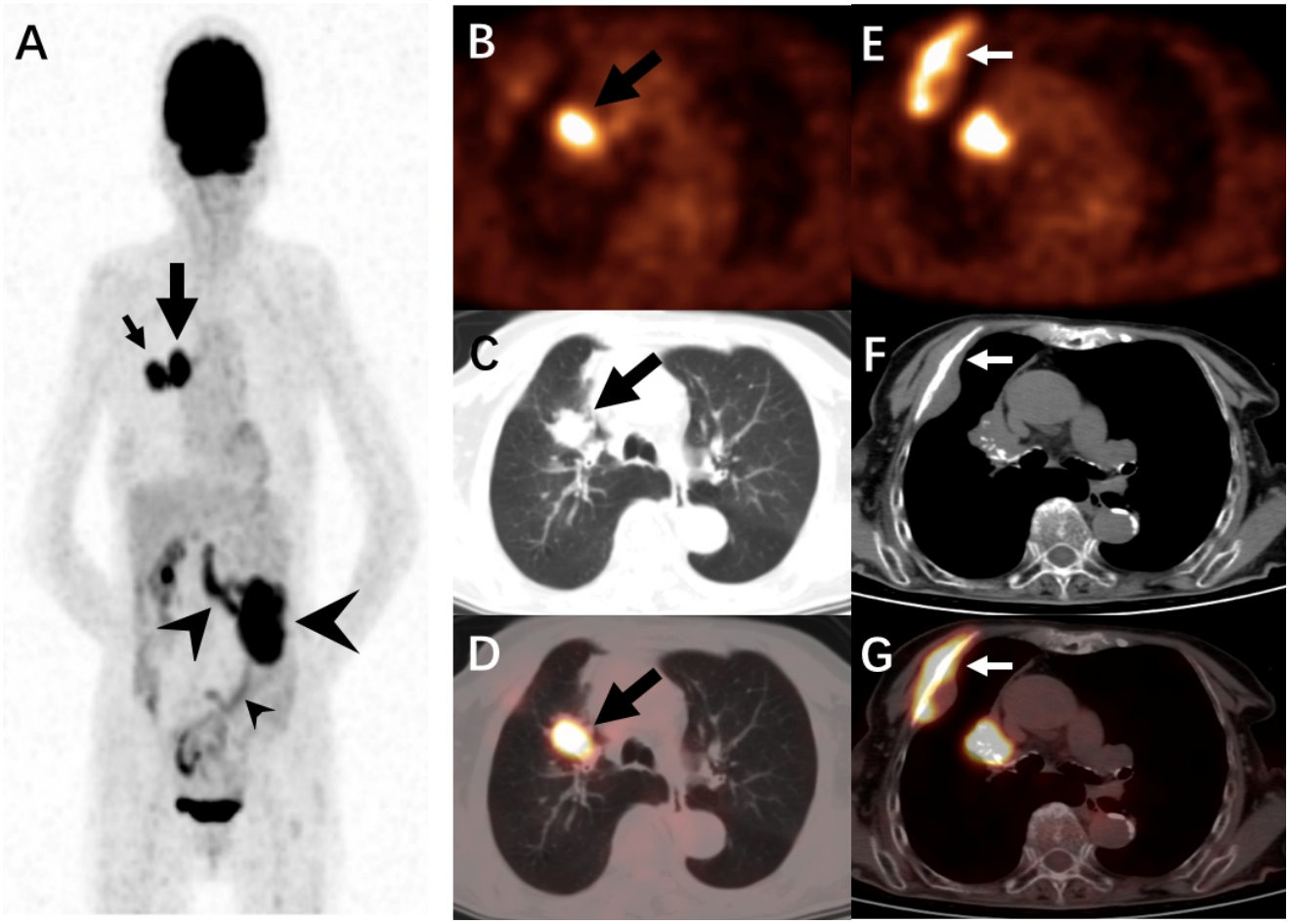

Figure 1. An 87-year-old woman had undergone left nephrectomy 8 months prior for a suspected renal malignancy, and was subsequently diagnosed with small cell carcinoma on histopathological examination. Preoperative chest and abdominal computed tomography (CT) revealed no evidence of distant metastases. The patient declined adjuvant chemotherapy postoperatively and presented with right anterior chest wall pain of 1-week duration. Fluorine-18-fluorodeoxyglucose (^{18}F-FDG) positron emission tomography (PET)/CT was subsequently performed for disease restaging. Maximum intensity projection (MIP) imaging (A) demonstrated hypermetabolic lesions in the right chest (arrows) as well as multiple hypermetabolic foci in the abdomen (arrowheads). Selected axial images of the lung (B: PET, C: CT, D: fused image) showed a focal area of increased radiopharmaceutical uptake with a maximum standardized uptake value (SUVmax) of 9.2, corresponding to an irregular pulmonary nodule in the right hemithorax on CT and fused images (arrows), findings consistent with pulmonary metastasis. On axial chest images (E: PET, F: CT, G: fused image), a hypermetabolic lesion (small arrows) with an SUVmax of 7.6 was identified in the right anterior fourth rib, corresponding to an osteolytic lesion on the corresponding CT image.

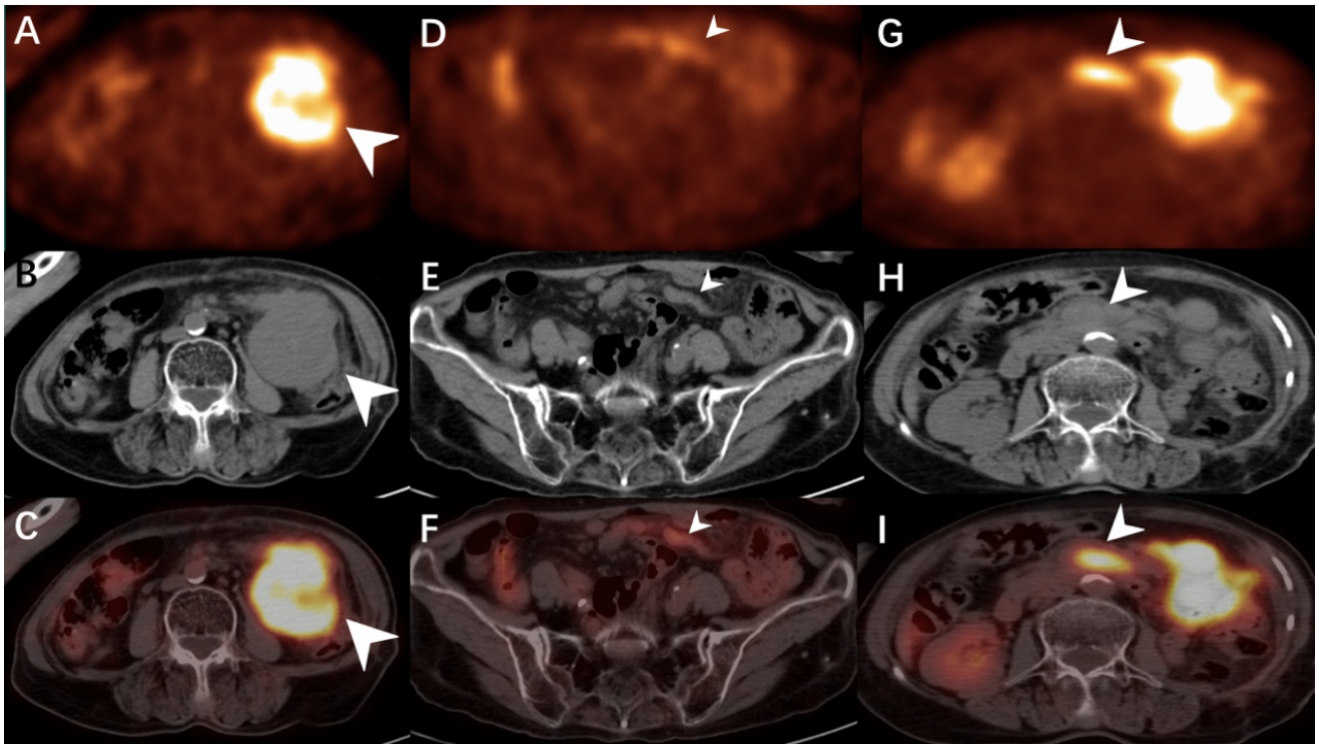

Figure 2. The most prominent abnormal uptake in the abdomen was a giant ^{18}F-FDG-avid mass (SUVmax 7.7) located in the left mesentery (large arrowheads) on axial images (A: PET, B: CT, C: fused image), causing compression and displacement of the jejunum and descending colon, findings consistent with mesenteric involvement. In addition to the above-mentioned lesions, linear tracer uptake with an SUVmax of 6.4 was visualized along the dilated inferior mesenteric vein and its branches (small arrowheads) (D: PET, E: CT, F: fused image), extending into the superior mesenteric vein (medium arrowheads) (G: PET, H: CT, I: fused image), in keeping with tumor thrombus. Given the patient's advanced age and clinical condition, a conservative management strategy was ultimately adopted. ^{18}F-FDG PET/CT confers a distinct advantage in differentiating tumor thrombus from bland thrombus, as the former demonstrates significantly higher SUVmax values than the latter [1]. Hypermetabolic tumor thrombus has been previously documented in a variety of malignancies, including hepatocellular carcinoma, renal cell carcinoma, adrenocortical carcinoma, and thyroid carcinoma, among others [2-6]. The inferior vena cava is the most frequently involved vessel, followed by the renal veins, portal veins, and superior vena cava [4-7]. Intravascular tumor thrombus arising from small cell carcinoma is extremely rare, with only one prior case reported in the literature describing left adrenal small cell carcinoma complicated by left renal vein thrombosis [6]. To the best of our knowledge, ^{18}F-FDG-avid venous tumor thrombus involving the inferior mesenteric vein has not been previously reported. In the present case, the high diagnostic sensitivity of ^{18}F-FDG PET/CT for the detection of unusual venous tumor thrombus in small cell carcinoma enables precise disease restaging.

The authors declare that they have no conflicts of interest.

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