Tc-99m Sulfur Colloid Scintigraphy in Differentiating Fat Sparing from Lymphomatous Involvement of Liver-Old Wine in New Bottle

Abstract

Hepatic mass lesions and focal fat sparing in a fatty liver may be difficult to differentiate on contrast-enhanced computed tomography (CT) imaging and F-18-fluorodeoxyglucose positron emission tomography/CT. Tc-99m Sulfur colloid (SC) scintigraphy has been used in the assessment of solid hepatic masses. Liver metastases will appear as focal photopenic defects due to the loss of Kupffer cell function. However, focal fatty infiltration or fat sparing of the liver does not affect Kupffer cell function and thereby leading to normal tracer uptake. Despite several advances in imaging modalities, Tc-99m SC scintigraphy is still a reliable armamentarium in the characterization of hepatic mass lesions.

Keywords: *F-18 Fluorodeoxyglucose positron emission tomography/computed tomography, Hodgkin's lymphoma, Tc-99m sulfur colloid scintigraphy*

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A 30-year-old male was diagnosed with Hodgkin's lymphoma and advised to undergo F-18-Fluorodeoxyglucose positron emission tomography/CT (F-18 FDG PET/CT) for baseline staging. He had a history of open splenectomy done for splenic abscess and splenic vein thrombosis. F-18 FDG PET/CT Figure 1a-e showed metabolically active retroperitoneal, mesenteric and bilateral pelvic lymph nodes along with focal hypermetabolism over the geographical areas of fat sparing in the enlarged fatty liver. To differentiate the fat sparing from malignant space-occupying lesions Tc-99m Sulfur colloid (SC) scan was performed.[1,2] SC scan images [Figure 1f-g] revealed focal photopenic defects in the corresponding areas of hypermetabolism and aiding to rule out fat sparing.

Kupffer cells are specialized tissue macrophages present in the sinusoidal vascular space of the liver, comprising 30% of the liver cells. SC particles are phagocytosed and trapped by these cells.[6] Kupffer cells are absent in hepatic adenomas, hepatocellular carcinoma, hepatic cavernous hemangioma, cholangiocarcinoma, angiosarcoma, and hepatic metastases.[3-6] However, it will be preserved in the areas of fat sparing. In our case, FDG PET-CT scan favored narrowing down the diagnosis to lymphomatous involvement, and fat sparing. SC scan finally helped to rule out fat sparing.

Patient consent

Informed written consent was obtained from the patient.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that his name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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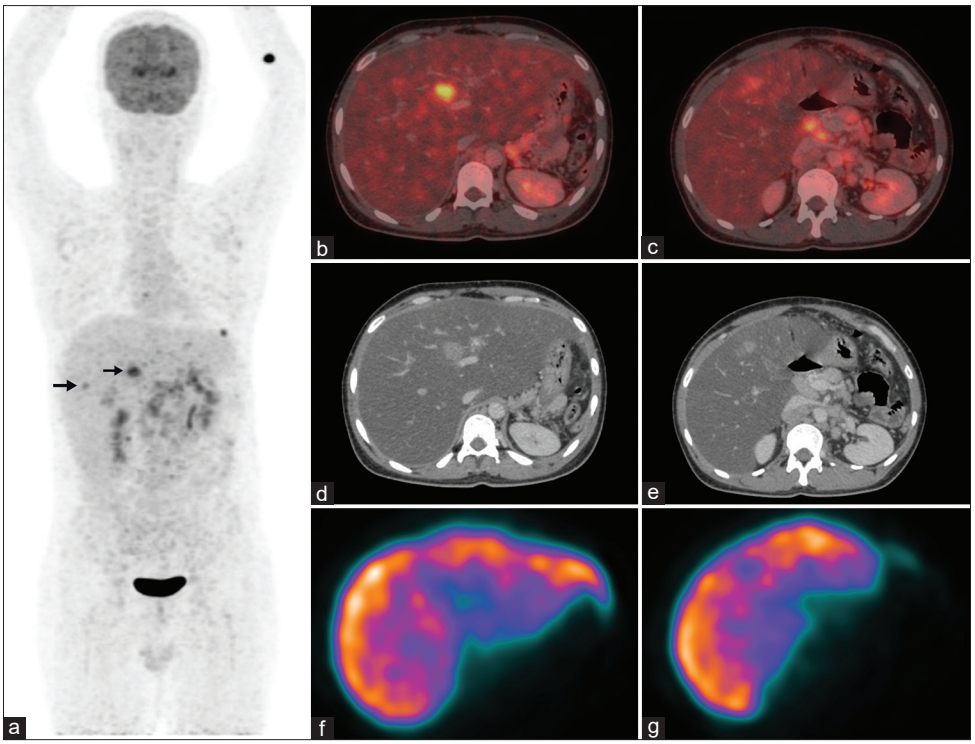

Figure 1: (a) image showing multiple foci of FDG uptake in the abdominal lymph nodes along with multiple foci of increased FDG uptake in the liver (black arrows). Axial fused F-18 FDG PET/CT (b and c) and CECT (d and e) images showing increased focal FDG uptake over hyperdense lesions in Segments IVa and V in the background of diffuse fatty changes. Tc-99m SC SPECT (f and g) images showing areas of photopenia over the corresponding regions in the liver. CT: Computed tomography, FDG: Fluorodeoxyglucose, F-18 FDG PET/CT: F-18 FDG positron emission tomography/CT, SPECT: Single-photon emission CT, SC: Sulfur colloid

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