

# Solitary sternal metastasis from hepatocellular carcinoma detected by F-18 FDG PET/CT

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## ABSTRACT

Fluorine-18 fluoro-deoxy-glucose positron emission tomography (F-18 FDG PET) is not sensitive modality for the diagnosis of primary hepatocellular carcinoma (HCC). However, FDG-PET imaging may be useful in the identification of extrahepatic metastases. We report an interesting image of HCC with solitary metastasis to sternum detected by F-18 FDG PET/CT.

**Keywords:** F-18 FDG, hepatocellular carcinoma, PET/CT, skeleton metastasis

## INTRODUCTION

Evaluation of primary hepatocellular carcinoma (HCC) using Fluorine-18 fluoro-deoxy-glucose positron emission tomography (F-18 (F-18 FDG PET) is not well-described. Extrahepatic metastases to the lung, lymph nodes, and bone are reported in up to 37% of HCC patients.<sup>[1-3]</sup> There is limited data on the role of F-18 FDG PET in the detection of metastasis from HCC. However, FDG-PET imaging has been reported to be an adjunct diagnostic modality in the identification of extrahepatic metastases from HCC, with a sensitivity of approximately 85%.<sup>[4-6]</sup> We report an interesting image of HCC with solitary metastasis to sternum detected by F-18 FDG PET/CT.

## CASE REPORT

A 65-year-old male presented with pain abdomen, progressive deepening jaundice, weight loss of 15 kg and anorexia over last 6 months. Hepatitis B surface antigen was negative. Computed tomography (CT) scan of the abdomen in arterial phase showed a heterogeneously enhancing hypodense lesion in the left lobes and segment VIII of the right lobe of liver. Fine needle aspiration cytology (FNAC) was consistent with primary HCC. F-18 FDG PET/CT performed for visualizing the extent of tumor and

metastatic work-up showed solitary sternal metastasis [Figure 1]. He was started on chemotherapy but later on died due to progression of the disease.

## DISCUSSION

The prognosis of patients with HCC is related to tumor stage at presentation and underlying liver function. Reliable staging of HCC is a fundamental precondition for deciding on the treatment modality and the Barcelona clinic liver cancer staging system links tumor stage with treatment modality.<sup>[7]</sup> In particular, accurate characterization of primary and metastatic HCC, showing the tendency toward early vascular invasion of the tumor is critical for proper treatment.<sup>[8]</sup> Imaging studies by dynamic CT and contrast-enhanced MRI are important in the diagnosis and staging of HCC,<sup>[7,9,10]</sup> but there is no consensus on which imaging tests are proper for detecting extrahepatic metastases.

F-18 FDG PET/CT might be useful in the evaluation of extrahepatic metastases.<sup>[4-6]</sup> Kawaoka *et al.*<sup>[4]</sup> compared the efficacy of PET/CT, multi-detector helical computed tomography (MDCT) and bone scintigraphy for the detection of extrahepatic metastases in patients with HCC. The mean sensitivity and specificity for diagnosis of lung metastasis from HCC were 85.2% and 88.9% for MDCT, and 59.2% and 92.6% for PET-CT, respectively. For lymph node metastases, these values were 62.5% and 79.2% for MDCT, and 66.7% and 91.7% for PET-CT, respectively; and for bone metastases 41.6% and 94.5% for MDCT, 83.3 and 86.1% for PET-CT. Because, whole-body combined PET/CT using F-18 FDG effectively detects numerous cancerous lesions this method is expected to improve the accuracy of HCC staging.<sup>[11]</sup> However, the high-level of

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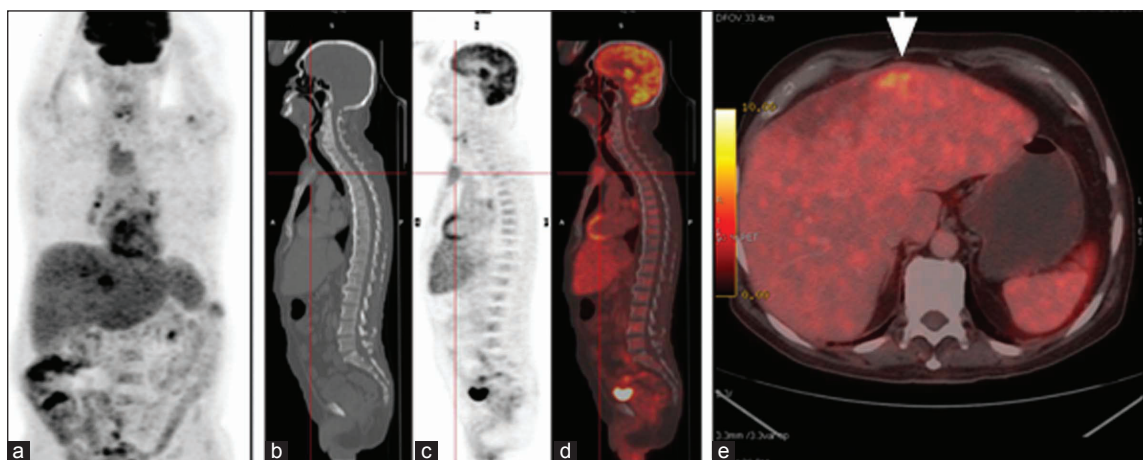


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**Figure 1:** F-18 fluorodeoxyglucose positron emission tomography images (a) maximum intensity projection shows increased tracer uptake in the primary hepatocellular carcinoma (arrow) and also in the manubrium sternum (curved arrow). Sagittal images (b) computed tomography, (c) positron emission tomography, (d) PET/CT images show FDG uptake in the osteolytic lesion with soft tissue mass in the manubrium sterni with no other abnormal uptake elsewhere in the body. Transaxial PET/CT image (e) of the abdomen shows focal FDG accumulation (arrow) in the periphery of the hypodense lesion, a primary tumour in the liver

glucose-6-phosphatase in liver tissue leads to the release of FDG-6-phosphate, resulting in reduced accumulation in differentiated HCCs.<sup>[12]</sup> This case highlights the usefulness of FDG PET/CT in detecting the solitary skeletal metastasis in HCC.

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