



¹⁸F-FDG PET/CT findings of hepatic and lung epithelioid hemangioendothelioma

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Introduction

Epithelioid hemangioendothelioma (EHE) is a rare form of low-grade malignant stromal tumor with metastatic potential that lies intermediately between hemangiomas and angiosarcomas (1-3). EHE mainly occurs in superficial and deep soft tissues but can also occur in solid organs such as the liver, lungs, bone, brain, small intestine, and spleen (4). Due to its atypical clinical symptoms, EHE can easily be misdiagnosed as metastases, epithelioid hemangiopericytoma, cholangiocarcinoma, and so on (5,6). Very little is known about EHE with regards to positron emission tomography (PET) imaging.

Case presentation

A 35-year-old woman underwent laparoscopic pelvic lesion resection for pelvic endometriosis. Routine follow-up computed tomography (CT) revealed a fusiform mass at the right border of the liver. Further contrast-enhanced CT showed that the liver margin was less smooth with large low-density lesions; the possibility of confluent fibrosis in cirrhosis was considered. In addition, contrast-enhanced magnetic resonance imaging (MRI) revealed multiple flaky, nodular, hypo-enhanced foci in the liver with restricted diffusion along with some foci adjacent to the shrunken hepatic capsule (*Figure 1*). Considering the presence of malignant tumor lesions, the possibility of metastasis was considered. Since the onset of the disease, the patient had experienced reduced vitality and quality of

sleep, normal urination and defecation, no change in body weight, and no other particular discomfort. The results of laboratory tests for liver function and tumor markers were normal. To rule out the possibility of metastases, we performed ¹⁸F-fluorodeoxyglucose (¹⁸F-FDG) PET/CT. Imaging revealed multiple low-density foci with moderate hypermetabolism in the liver parenchyma, and multiple solid nodules with mild hypermetabolism in both lungs (*Figure 2*). Liver and lung biopsies were performed, and according to the results of pathology and immunohistochemistry, the patient was diagnosed with EHE. Later, the patient was discharged without any unusual discomfort and was advised to receive treatment in a specialized liver hospital. All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent was provided by the patient for publication of this case report and the accompanying images. A copy of the written consent is available for review by the editorial office of this journal.

Discussion

¹⁸F-FDG PET/CT manifestations vary for different types of liver disease. In hepatocellular carcinoma (HCC), the level of glucose metabolism is related to the degree of tumor differentiation. Poorly differentiated HCC exhibits high uptake of ¹⁸F-FDG, whereas the ¹⁸F-FDG uptake of well-differentiated HCC is close to or even

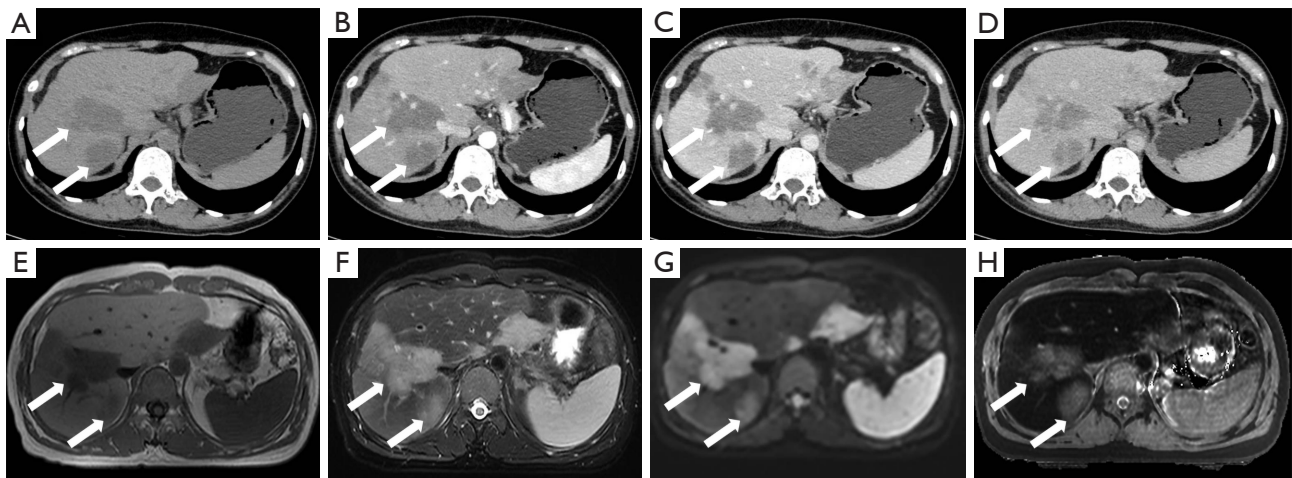


Figure 1 A 35-year-old woman underwent laparoscopic pelvic lesion resection for pelvic endometriosis. Routine follow-up CT revealed a fusiform mass at the right border of the liver. Subsequent abdominal contrast-enhanced CT and MRI were performed. CT non-contrast (A) stage, multiple low-density shadows of different sizes and irregular shapes can be seen in the liver parenchyma, and no definite enhancement is shown in the arterial (B), venous (C), and delayed (D) phases. On MRI, T1-weighted (E) and fat-suppressed T2-weighted (F) sequences show low/high signal intensity of the intrahepatic mass. ADC (H) measurements obtained by diffusion-weighted imaging (G) show mild restricted diffusion (white arrows). CT, computed tomography; MRI, magnetic resonance imaging; ADC apparent diffusion coefficient.

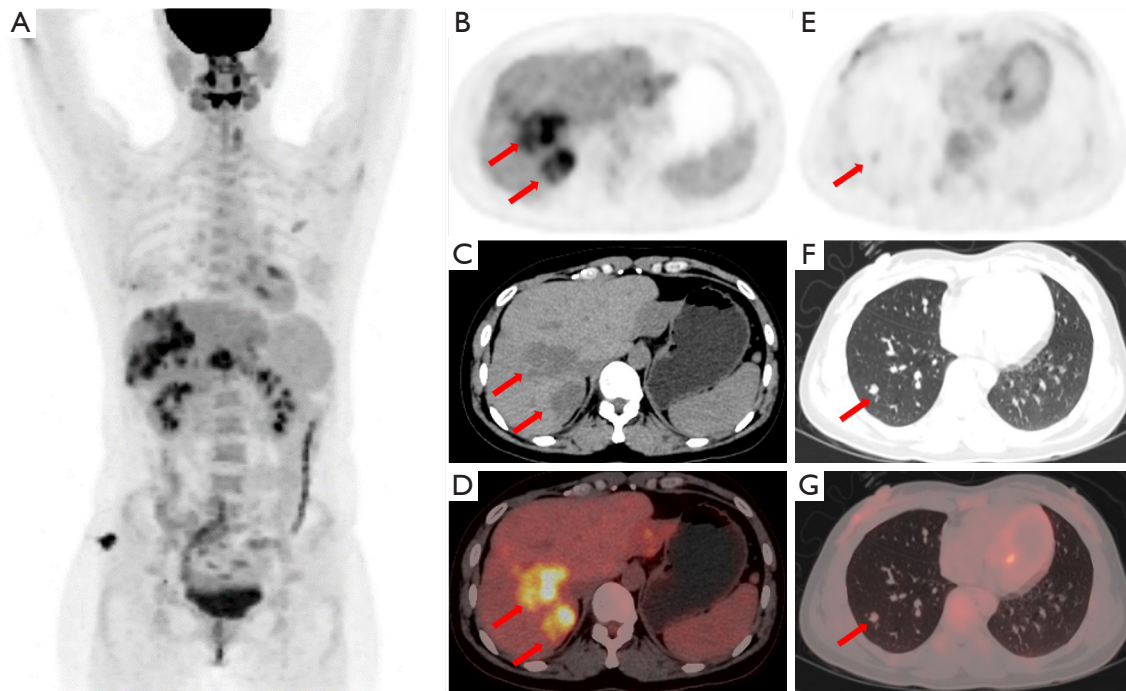


Figure 2 To rule out the possibility of metastases, ^{18}F -FDG PET/CT imaging was performed. The MIP (A) image demonstrates multiple foci with moderate hypermetabolism in the liver parenchyma. Axial PET (B), CT (C), and corresponding fusion image (D) showing multiple low-density foci with moderate hypermetabolism in the liver parenchyma (SUVmax = 7.5, red arrows). Axial PET (E), CT (F), and the corresponding fusion image (G) showing multiple solid nodules with mild hypermetabolism in both lungs (SUVmax = 1.8, red arrows). ^{18}F -FDG, ^{18}F -fluorodeoxyglucose; PET, positron emission tomography; CT, computed tomography; MIP, maximum intensity projection; SUVmax, maximum standard uptake value.

slightly lower than that of normal liver parenchyma (7,8). Cholangiocarcinoma presents as an intrahepatic low-density lesion with abnormal elevated glucose metabolism, uneven density, unclear boundary, an irregularly dilated intrahepatic bile duct, and local hepatic lobe atrophy (9). Metastatic liver cancer is usually characterized by single or multiple lesions with abnormal elevated glucose metabolism in the liver (10). ¹⁸F-FDG PET/CT images of hepatic abscesses show a ring with high ¹⁸F-FDG uptake and a low-density lesion with blurred edges. The advantage of ¹⁸F-FDG PET/CT in the diagnosis of liver tumors lies in the comprehensive and accurate staging, restaging, and efficacy evaluation. The downside is that it can lead to false negative results when the tumor is too small or well differentiated (11,12).

In such cases, ¹⁸F-FDG PET/CT as a systemic examination can provide a comprehensive assessment of the lesion. When a poorly defined, low-density hepatic mass with moderate hypermetabolism is observed, hepatic EHE should be included in the differential diagnosis for liver cancer.

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Footnote

Conflicts of Interest: The author has completed the ICMJE uniform disclosure form (available at <https://qims.amegroups.com/article/view/10.21037/qims-22-1422/coif>). The author has no conflicts of interest to declare.

Ethical Statement: The author is accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent was provided by the patient for publication of this case report and the accompanying images. A copy of the written consent is available for review by the editorial office of this journal.

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