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Recurrent Extrahepatic Hepatocellular Carcinoma Detected by ^{18}F -Choline PET/CT

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Abstract: Diagnosis of recurrent hepatocellular carcinoma (HCC) is sometimes challenging, especially when extrahepatic disease is present. Here, we report on a 49-year-old woman with a history of HCC who was referred to our institution with suspicion of tumor recurrence for further workup. Combined ^{18}F -choline PET/CT revealed a soft tissue mass at the right thoracic wall highly consistent with HCC.

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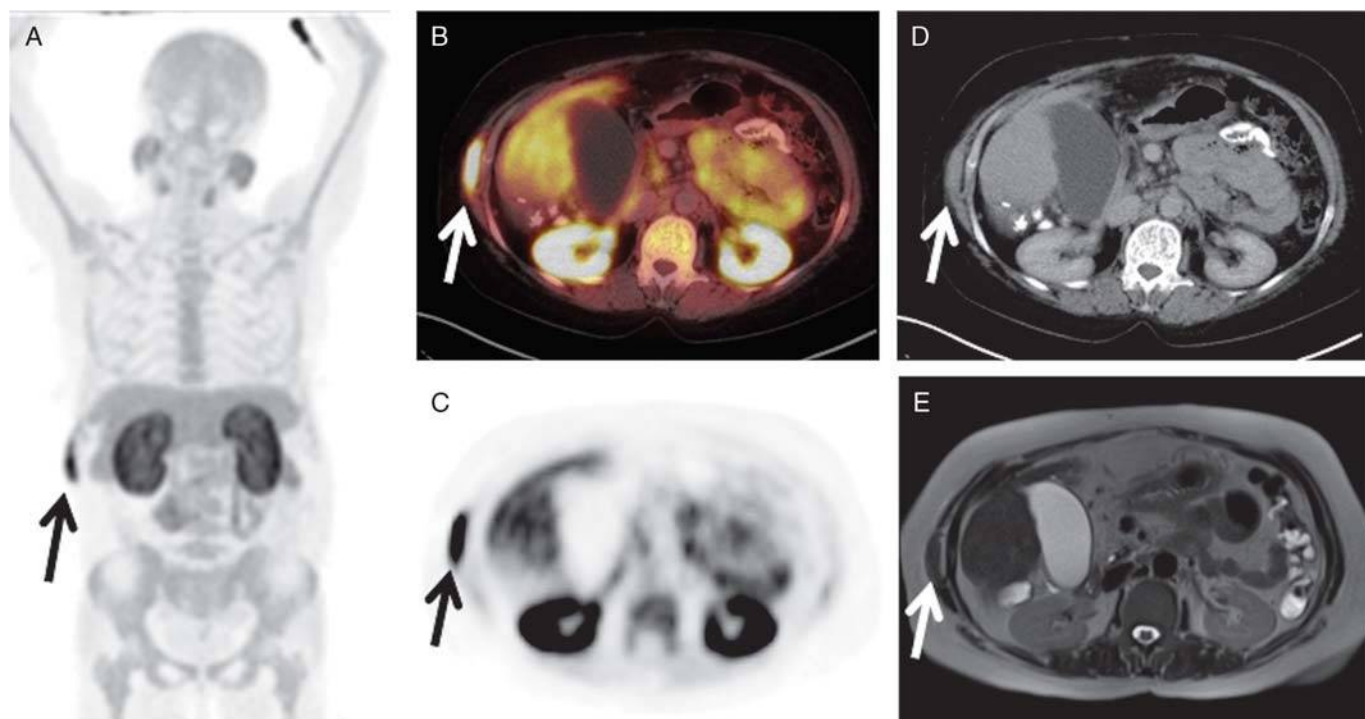


FIGURE 1. A 49-year-old Turkish woman with β -thalassemia major and liver cirrhosis due to post-transfusional chronic hepatitis C (genotype 1b) was referred for liver transplant evaluation. In 2009, hepatocellular carcinoma (HCC) was diagnosed and subsequently resected (BCLC A). Tumor follow-up was unremarkable until December 2014, when α -fetoprotein levels started to rise. Diagnostic workup including MRI and CT raised the concern for recurrent intrahepatic disease, which, however, was ruled out by angiography. At the day of presentation (April 2015), the physical examination was unremarkable. Laboratory tests showed moderate abnormalities in liver function. In addition, slight microcytic anemia was present. On long-term chelator therapy, iron parameters were within normal limits. However, serum α -fetoprotein levels had further increased to 138.2 $\mu\text{g/L}$. Repeated workup including CT and MRI was reported to be unremarkable. PET/CT with ^{18}F -labeled choline was ordered. ^{18}F -choline PET/CT revealed intense tracer uptake of a soft tissue lesion at the right thoracic wall (A, MIP; B, fused PET/CT; C, transaxial PET; D, transaxial CT; arrows), consistent with vital tumor, which, at retrospective review, had already been present at the time point of previous CT (not shown) and MRI (E, T2-weighted HASTE, arrow). No further intrahepatic or extrahepatic focus could be detected. The patient underwent resection of the lesion, and metastasis of previous HCC was confirmed. However, imaging with ^{18}F -labeled glucose (FDG) is the mainstay of oncologic PET/CT and has been demonstrated to play a role in HCC management,^{1,2} especially well-differentiated and moderately differentiated tumors can fail to accumulate this tracer.^{3,4} As alternative, new tracers including ^{11}C -labeled acetate and ^{11}C - or ^{18}F -labeled choline have shown promising results for both tumor detection as well as treatment response evaluation.⁵⁻⁸ In our case, PET changed patient management as listing to liver transplantation for this patient was not possible due to extrahepatic tumor burden.