A rare case mimicking positron emission tomography/computed tomography mismatch: Hepatic subcapsular hematoma

Sabahat Inanir, Kevser Oksuzoglu, Mustafa Aras[1], Davut Tuney[2]

Departments of Nuclear Medicine and [2]Radiology, Marmara University, School of Medicine, Istanbul, [1]Department of Nuclear Medicine, Bulent Ecevit University, School of Medicine, Zonguldak, Turkey

ABSTRACT

Subcapsular collections of bile, air or blood in the liver have been described following transhepatic procedures due to the leakage of bile and blood from the percutaneous puncture at the surface of the liver. Herein we presented the subcapsular collection led to a mismatch between functional and anatomical boundaries of the liver.

Keywords: F-18 fluorodeoxyglucose, hematoma, liver, positron emission tomography/computed tomography, subcapsular collection

A 70-year-old female patient with colon cancer was referred to F-18 fluorodeoxyglucose positron emission tomography/computed tomography (PET/CT) for restaging due to the increased tumor marker levels. Besides hypermetabolic primary tumor in cecum, peritoneal carcinomatosis, metastatic lung nodules and bilateral adrenal metastasis [Figure 1a: Maximum intensity projection image], there was a prominent mismatch between PET and CT boundaries of the liver mimicking coregistration artifact [Figure 1b: PET, CT and fusion PET/CT images]. One-day before PET/CT study, the patient underwent percutaneous transhepatic biliary drainage (PTBD) procedure due to a metastatic mass obliterating the lumen of the distal common bile duct. On the PET/CT images, PTBD-related findings were also observed, such as the presence of contrast material within the main hepatic and dilated intrahepatic bile ducts [star in Figure 1c], small air bubbles [thin arrows in Figure 1c] and curvilinear hyperdensity surrounding the lateral border of the right lobe of the liver in the perihepatic space [thick arrow in Figure 1b]. However, there was no difference between Hounsfield unit (HU) values of the liver and the mismatched zone (53 HU vs. 57 HU respectively). Three weeks later, a follow-up abdominal CT showed a large subcapsular collection with mixed attenuation (with CT numbers of 4 and 31 HU) [Figure 1d]. Both PET/CT and abdominal CT were obtained without intravenous contrast administration. Subcapsular collections of bile, air or blood in the liver have been described following transhepatic procedures due to the leakage of bile and blood from the percutaneous puncture at the surface of the liver.[1-7] In the presented case, the subcapsular collection led to a mismatch between functional and anatomical boundaries of the liver. The HU values of extravasated blood during acute phase were similar to that of liver parenchyma, and it is difficult to diagnose with unenhanced CT.[8] This could be explained with the generation of fibrin fibrils and globin molecules.[9] Later on, proteolysis begins, and the density of the collection gradually decreases. Care should be taken with respect to the timing of PET/CT, interventional procedures, and their complications while reporting PET/CT studies.

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Address for correspondence:
Dr. Kevser Oksuzoglu, Department of Nuclear Medicine, Marmara University, School of Medicine, Istanbul, Turkey.
E-mail: kevser.koc@hotmail.com

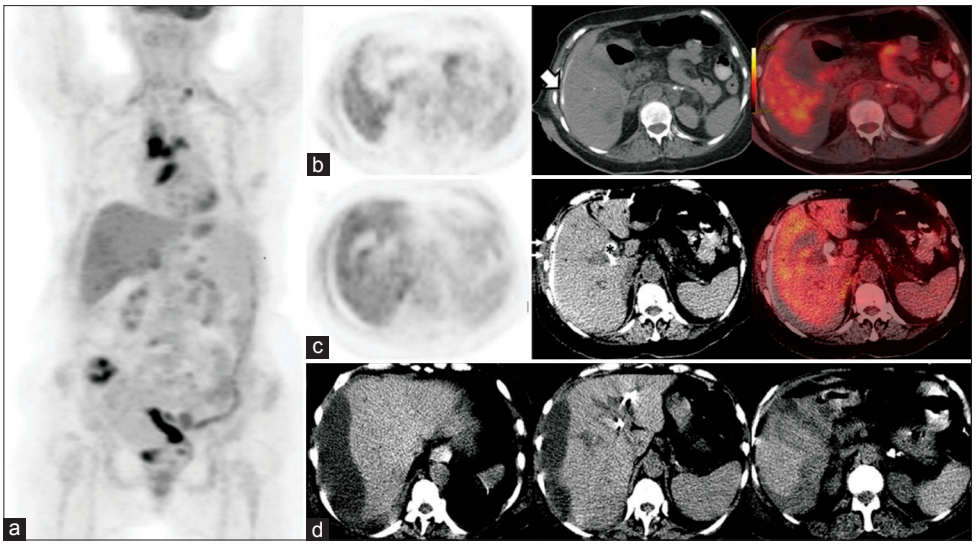

Figure 1: Besides hypermetabolic primary tumor in cecum, peritoneal carcinomatosis, metastatic lung nodules and bilateral adrenal metastasis. ([a] maximum intensity projection image), there was a prominent mismatch between positron emission tomography (PET) and computed tomography (CT) boundaries of the liver mimicking coregistration artifact ([b] PET, CT and fusion PET/CT images). On the PET/CT images, percutaneous transhepatic biliary drainage-related findings were also observed, such as the presence of contrast material within the main hepatic and dilated intrahepatic bile ducts (star in c), small air bubbles (thin arrows in c) and curvilinear hyperdensity surrounding the lateral border of the right lobe of the liver in the perihepatic space (thick arrow in b). Three weeks later, a follow-up abdominal CT showed a large subcapsular collection with mixed attenuation (with CT numbers of 4 and 31 Hounsfield units) (d)

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