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INTERESTING IMAGE

Detection of Extramedullary Multiple Myeloma in Liver by FDG-PET/CT

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We present the case of a 42-year-old man with a painful mass lesion in the right shoulder that was detected by contrast-enhanced computed tomography (CT) and ^{18}F-fluoro-2-deoxyglucose (^{18}F-FDG) positron emission tomography (PET)/CT (Fig. 1). Excisional biopsy revealed infiltration of plasma cells with anaplastic features, consistent with solitary plasmacytoma (PC). Serum analysis showed elevation of serum free lambda light chain levels (27.78 mg/l), with an abnormally high kappa:lambda ratio (2.33) and high total proteins (10.4 g/dl). Serum protein electrophoresis revealed an M spike in the gamma-globulin region (56.1 %=5.8 g/dl).

Subsequently, ^{18}F-FDG PET/CT revealed another hypermetabolic mass in the right lobe of the liver (Fig. 2).

CT-guided biopsy of the liver lesion revealed plasma cell myeloma, consistent with multiple myeloma (Fig. 3).

Multiple myeloma presenting as nodular liver masses is very rare in clinical practice. In a retrospective review of more than 2,000 patients, Talamo et al. [1] reported only nine cases where there was nodular involvement of the liver by multiple myeloma. The organ most commonly involved was the liver, followed by pancreas, stomach, peritoneum with malignant ascites, colon, rectum, duodenum and ileum [1]. Therefore, the literature published thus far has been limited to a few reports and case series [2–10]. Among these reports, some had demonstrated the PET or PET/CT findings of nodular liver involvement of multiple myeloma [6, 8–10]. About 10 % of the solitary myelomas appeared as extramedullary PC or solitary PC of bone [11]. In spite of the advances in therapy, the treatment of multiple myeloma is still palliative. However, solitary PC could be cured by resection or radiation therapy [11]. Thus, differentiation between PC and multiple

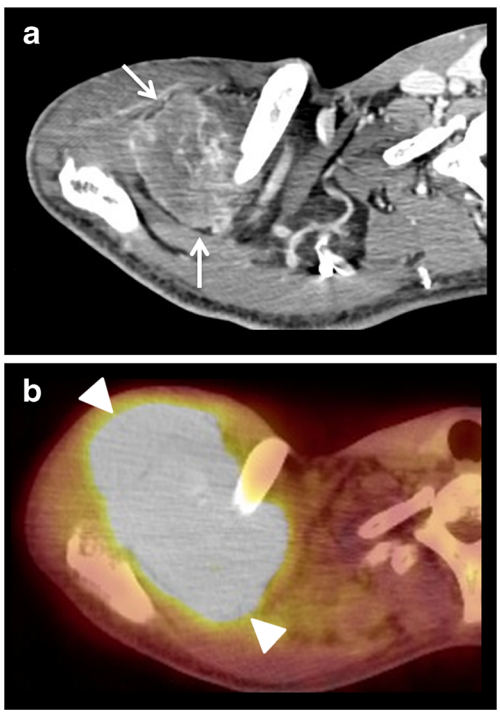

Fig. 1 Transverse image of contrast-enhanced computed tomography (CT) of the right shoulder revealed a 6-cm-sized hypervascular mass lesion in the clavicular area with bony destruction (**a** *arrows*). On the subsequent ^{18}F-FDG PET/CT, this mass showed intense hypermetabolism (**b** *arrowheads*; maximum SUV, 10.5)

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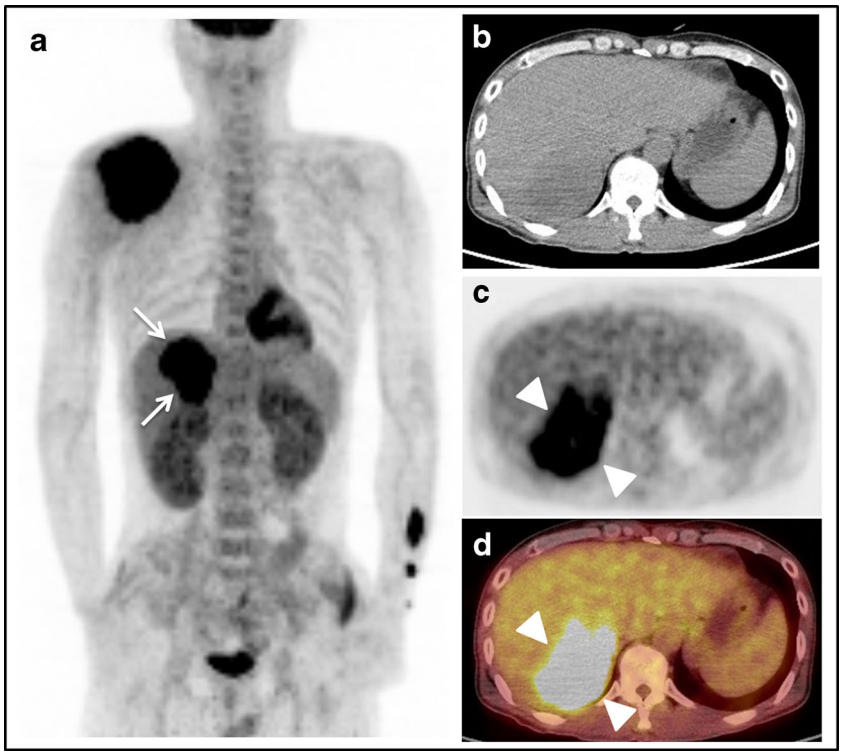

Fig. 2 ^{18}F-FDG PET/CT also revealed another hypermetabolic mass in the right lobe of liver (**a** maximal intensity projection image, *arrows*). This mass showed slightly decreased density on transverse CT image of the PET/CT (**b**) with intense hypermetabolism (**c**, **d**; maximum SUV, 8.5)

myeloma is essential in making a decision for the appropriate therapeutic regimen. ^{18}F-FDG PET/CT has the unique ability to detect and characterize malignant lesions in one single examination. Schirrmeister et al. [11] reported that ^{18}F-FDG PET revealed additional lesions in 33 % of patients with multiple myeloma and influenced therapy regimen in 27 % of patients. This case emphasized the usefulness of ^{18}F-FDG PET/CT to stage the multiple myeloma and presented the unique ^{18}F-FDG PET/CT findings of rare extramedullary multiple myeloma in the liver.

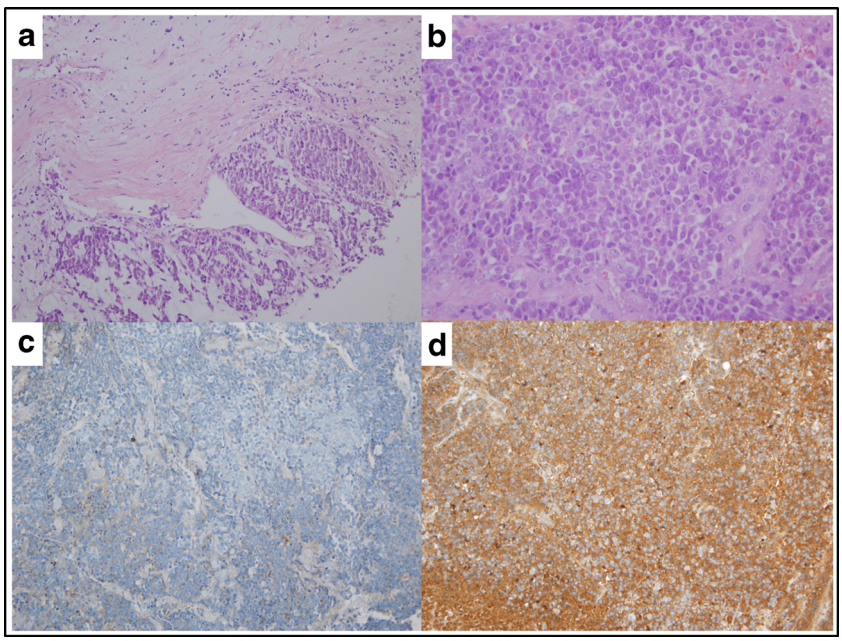

Fig. 3 The photomicrograph of liver needle-biopsy specimen shows infiltrated plasma cell myeloma with poor differentiation (hematoxylin-eosin, magnification×200) (**a**). The tumor cells of the shoulder mass had similar histological morphology to the liver mass (hematoxylin-eosin, magnification×400) (**b**). Immunohistochemistry shows strong positivity in lambda light chain restricted population (magnification×200) (**c**) and negativity for kappa light chain, consistent with multiple myeloma (magnification×200) (**d**)

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Conflict of Interest The authors declare no conflict of interest.

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