

Incidental Detection of Temporary Focal FDG Retention in the Spleen

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Received: 12 October 2010 / Accepted: 20 February 2011 / Published online: 3 May 2011
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F-18 fluorodeoxyglucose (FDG) positron emission tomography (PET)/computed tomography (CT) is a valuable tool in discriminating malignancy from benign lesion. But because various false-positive results reduce the diagnostic specificity, nuclear medicine physicians should be familiar with possible false-positive cases. Although many cases of high FDG uptake mimicking malignancy have been reported, temporary FDG uptake of normal spleen has not been reported previously. We report herein a phenomenon of temporary intense focal FDG uptake of normal spleen without evidence of metastasis in a 46-year-old woman with a history of anal cancer. (Figs. 1 and 2)

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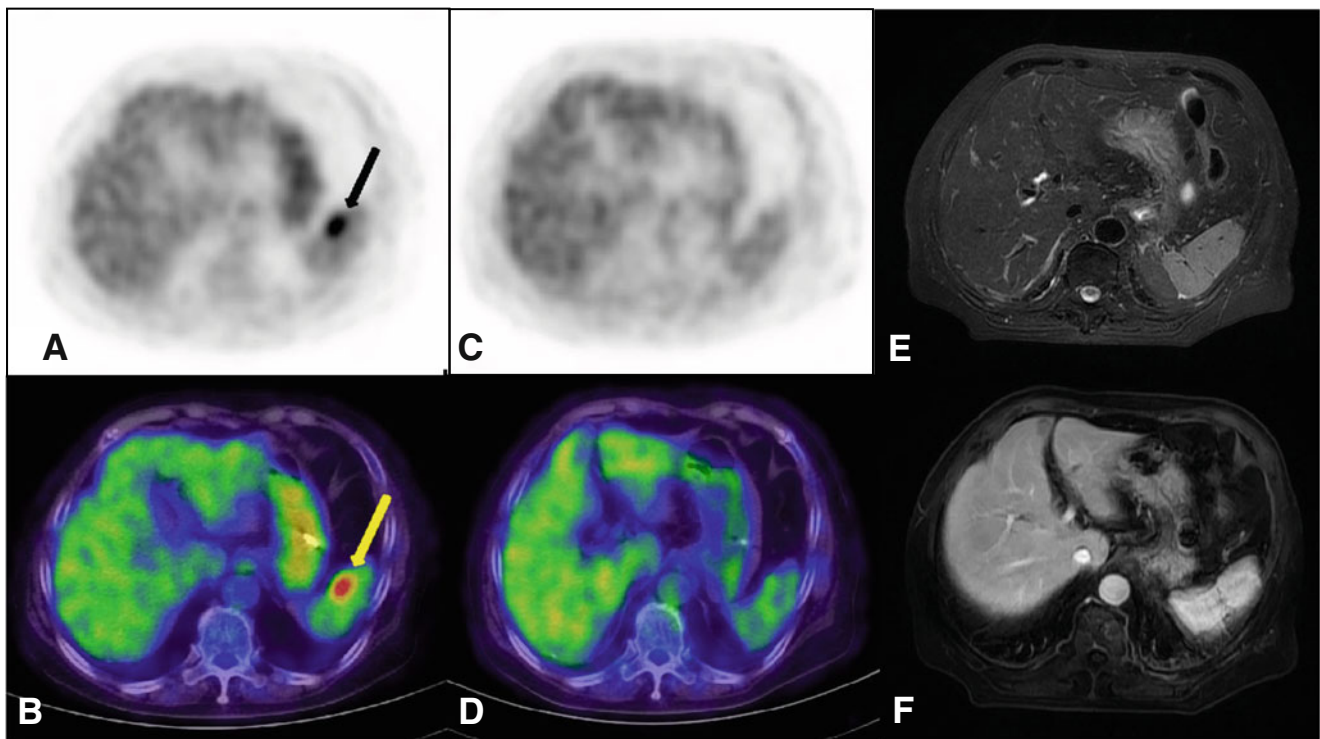


Fig. 1 a–f A 66-year-old woman underwent a whole-body F-18 fluorodeoxyglucose (FDG) positron emission tomography (PET)/computed tomography (CT) study for restaging. She had undergone concurrent chemoradiation therapy for anal cancer 2 months previously. Initial FDG PET showed only intense FDG uptake of anal cancer. **a** Sequential whole-body FDG-PET and **b** PET/CT images revealed decreased FDG uptake of known anal cancer and a club-shaped FDG uptake in the splenic hilum (*arrows*), which was interpreted to be strongly suggestive of metastasis or splenic malignancy, such as primary splenic lymphoma. The maximum standardized uptake value of the splenic hypermetabolic lesion was 8.8. There were no abnormal findings in the left lower lung, diaphragm and upper stomach. Because contrast-enhanced CT was normal, surgical exploration was deferred and we performed follow-up FDG PET/CT and MRI after 3 weeks. No treatment had been performed on her between the two tests. **c** Whole-body FDG-PET and **d** PET/CT images revealed no abnormal finding in the spleen. **e** Axial respiratory triggering fast spin-echo T2-weighted with fat suppression

MRI image and **f** gadolinium-enhanced three-dimensional (3D) LAVA (fat saturation gradient echo T1 weighted) axial image showed no abnormality in the spleen. Clinical course was uneventful and FDG PET/CT performed 5 months later showed no abnormal finding in the spleen. Although pathologic confirmation was not done, normal contrast-enhanced CT, normal follow-up PET/CT, normal magnetic resonance imaging (MRI), and an uneventful course provided enough evidence to support the view that there was no pathology in the spleen. To our knowledge, increased temporary focal FDG uptake in the spleen, mimicking metastasis or splenic malignancy in a patient treated for cancer, has never been reported before. The hypervascularity of the spleen may contribute to the occurrence of such a phenomenon. For about two decades, FDG-PET has been in the limelight as regard to discriminating malignancy from benign lesion [1, 2]. But because diverse false-positive and false-negative results sometimes reduce its accuracy [3–7], it is worthy to include it to the gamut that high temporary focal FDG uptake in the spleen may occur without any proven pathology

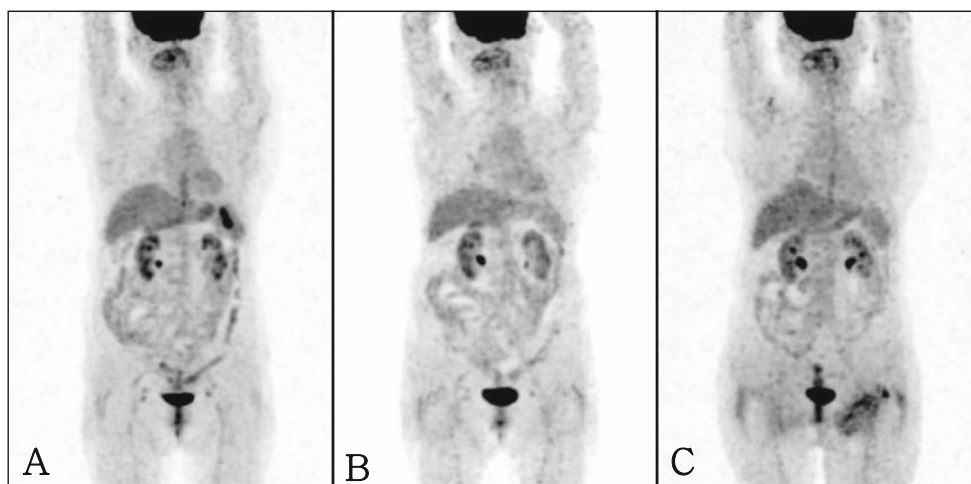


Fig. 2 a A whole-body maximum intensity projection (MIP) volume rendering image of the FDG-PET scan shows an intense FDG focus in the splenic hilum. There is no abnormal FDG focus in the other PET field. The high FDG uptake contour along the upper pole of the spleen excluded the false-positive result in relation to physiologic FDG

uptake of the gastro-intestinal tract. **b** A whole-body FDG PET performed 3 weeks later shows that the abnormal FDG uptake in the spleen has disappeared. **c** After 5 months, a whole-body FDG PET does not reveal any abnormal FDG foci in the spleen

Acknowledgement The present research was conducted by the research fund of Dankook University in 2009

References

1. Phelps ME. PET: the merging of biology and imaging into molecular imaging. *J Nucl Med.* 2000;41:661–81.
2. Israel O, Kuten A. Early detection of cancer recurrence: ^{18}F -FDG PET/CT can make a difference in diagnosis and patient care. *J Nucl Med.* 2007;48:28S–35.
3. Lin KH, Wang JH, Peng NJ. Disseminated nontuberculous mycobacterial infection mimic metastases on PET/CT scan. *Clin Nucl Med.* 2008;33:276–7.
4. Choi SJ, Kim JH, Hyun IY. FDG Uptake in respiratory muscle mimicking metastasis in patients with gastric cancer. *Nucl Med Mol Imaging.* 2006;40:233–6.
5. Lee JH, Ryu JS. A case of esophageal leiomyoma showing high FDG uptake on FDG PET. *Nucl Med Mol Imaging.* 2008;42:323–7.
6. Blake MA, Singh A, Setty BN, et al. Pearls and pitfalls in interpretation of abdominal and pelvic PET-CT. *Radiographics.* 2006;26:1335–53.
7. Barrington SF, O'Doherty MJ. Limitations of PET for imaging lymphoma. *Eur J Nucl Med Mol Imaging.* 2003;30:S117–27.