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Case Report

Urinary Bladder Diverticulum in Inguinal Hernia Sac, Diagnosed by FDG-PET/CT Imaging

Pelin Ozcan Kara[1]*, Ozlem Sahin[2], Oktay Sari[3], Gonca Kara Gedik[3] and Erhan Varoglu[2]

[1]*Department of Nuclear Medicine, Mersin University, Turkey*
[2]*Department of Nuclear Medicine, Meram Medicial Selcuk University, Turkey*
[3]*Department of Nuclear Medicine, Selcuk University, Turkey*

Corresponding author
Pelin Ozcan Kara, Department of Nuclear Medicine, Mersin University, Medical Faculty, Mersin, Turkey, Tel: +90-533-5750785; Email: ppelinozcan@gmail.com

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Abstract

Inguinal hernia is a common pathology that is seen higher incidence in general population. But the presence of bladder diverticulum in an inguinal hernia sac is a rare condition. In this case report, the findings of a patient with bladder diverticulum in inguinal hernia sac identified as an incidental finding on fluorine-18 fluorodeoxyglucose -positron emission tomography/computed tomography (F18 FDG-PET/CT) imaging, is presented. CT imaging has been useful in showing focal increased FDG uptake seen on PET imaging belonging to a bladder diverticulum activity.

INTRODUCTION

Positron Emission Tomography (PET) with fluorine-18 fluorodeoxyglucose (F18-FDG) has evolved as a useful imaging modality in the assessment of a variety of cancers, especially for tumor staging and post treatment monitoring. It provides metabolic information. Although, when used alone, relative lack of anatomical landmarks, is a major limitation of PET imaging, this limitation of PET imaging is overcome by the availability of integrated PET/CT imaging. PET and CT images are acquired in a procedure, yielding fused anatomical and functional data sets. Studies with integrated PET/CT imaging have shown promising results. In this case report, the findings of a patient with bladder diverticulum in inguinal hernia sac identified as an incidental finding on FDG-PET/CT imaging, is presented. CT imaging provided by PET/CT has been useful in showing focal increased FDG uptake seen on PET imaging belonging to a bladder diverticulum activity.

CASE REPORT

A 74-year-old male patient with operated prostate cancer who complained hematuria was referred for FDG-PET/CT examination for re-staging. Routine PET/CT images from the top of the skull to the mid thighs were acquired 60 min after the intravenous injection of 10 mCi of FDG per standard protocol. On FDG-PET/CT imaging, increased FDG uptake belonging to urinary bladder diverticulum was detected on left anterior proximal and right anterior distal areas adjacent to urinary bladder at pelvic region (Figure 1 a and b-short arrows). In addition, focal area of intense radiotracer uptake at left inguinal region that appears separated from the vesical activity was detected on PET imaging (Figure 1a and 2-long arrows). PET/CT fusion image has confirmed that this activity was belonging to a bladder diverticulum in inguinal hernia sac. The bladder diverticulum has the same maximum standartized uptake value (SUVmax) as the urinary bladder. There was no any other pathological finding on PET/CT imaging.

DISCUSSION

Recently, more than 95% of PET procedures worldwide are performed with FDG. FDG is well established as a marker of malignant disease due to the increased glycolytic activity of neoplastic cells. Furthermore, activated inflammatory cells are also known to have increased glucose utilisation, which makes FDG-PET imaging useful in detection of inflammatory and infectious processes. Normal physiological distribution of FDG is important for differential diagnosis. The brain, heart, liver, genitourinary, and gastrointestinal system are the main normal human in vivo distribution of FDG. Under standard conditions the highest FDG activity is seen at the gray matter. At fast, cardiac uptake is variable. Liver and spleen shows low-grade diffuse activity and variable uptake pattern is seen at the gastrointestinal system. In normal individuals, intense FDG uptake is observed in kidneys, ureters, and bladders because of normal urinary excretion.

Urinary bladder is only 1-3% between the various organs that can enter into the inguinal hernia sac [1-3]. Patients are often asymptomatic. Therefore, inguinal herniation of bladder is often diagnosed as an incidental finding on diagnostic imaging procedures such in our case. But on PET imaging, it is important to distinguish this activity from other possible malignant and benign conditions. The differential diagnosis at the inguinal

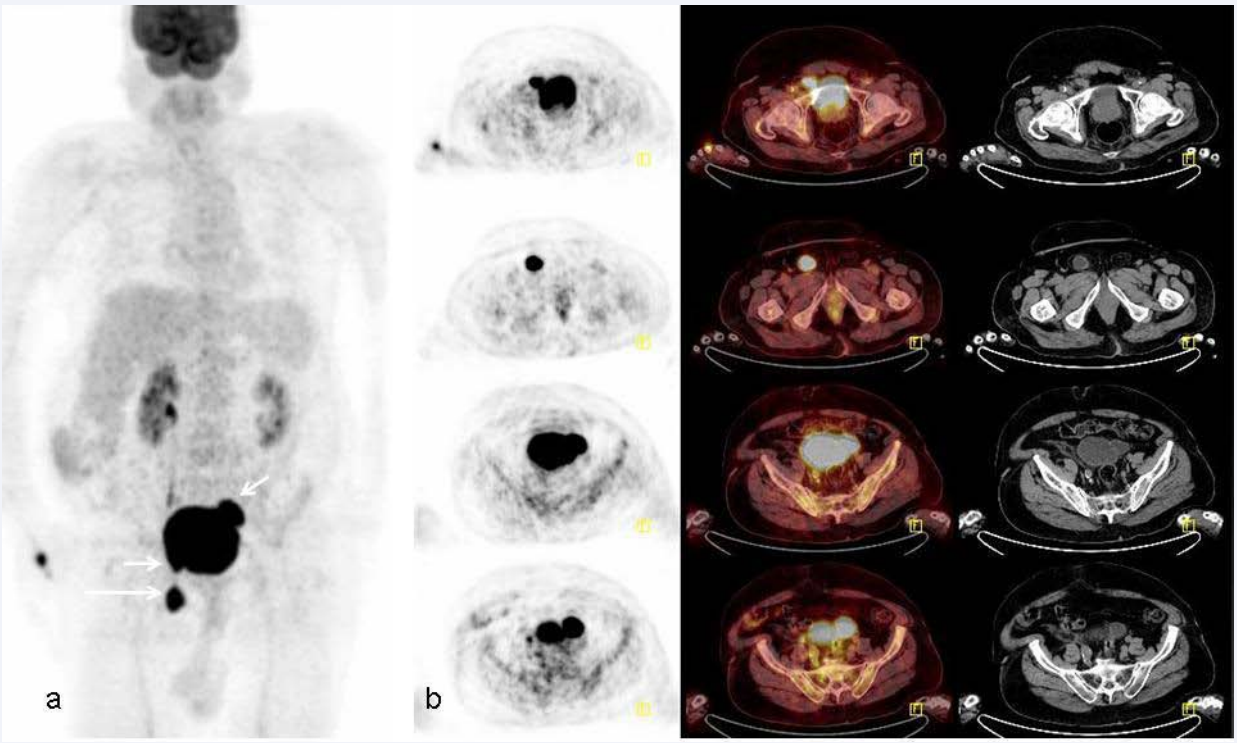

Figure 1 Increased FDG uptake are seen at left anterior proximal and right anterior distal areas belonging to urinary bladder diverticulum adjacent to urinary bladder at pelvic region on anterior MIP (Maximum intensity projection) image (a), and axial PET, PET/CT fusion and CT images (short arrows). Additionally, focal area of intense radiotracer uptake in left inguinal region that appears separated from the vesical activity (long arrow).

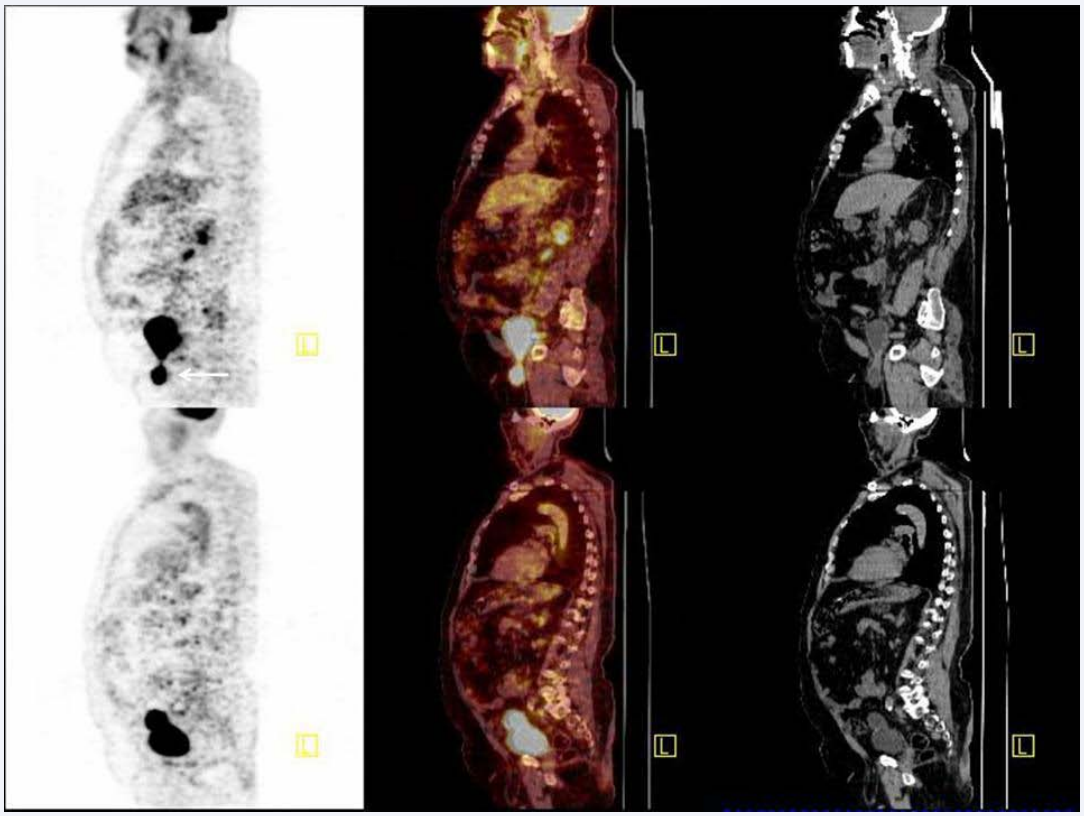

Figure 2 Sagittal PET, PET/CT fusion and CT images show urinary bladder diverticulum in inguinal hernia sac (arrows). Urinary bladder and bladder diverticulum are joined by a bridge of moderate increased FDG activity.

region is very important for hypermetabolic foci because of the possibility of metastasis at this level in cancer patients ongoing PET imaging for detection of metastases. It is important to differentiate the activity in the groin from lymph node activity, testicular cancer, metastatic disease activity, inflamation and urine skin contamination artefact [4]. Also, on pelvic imaging urinary bladder activity can easily be confused with the activities of scrotum, intestine and rectum.

In this case, CT component of the PET/CT provided an advantage in the differential diagnosis of the inguinal region. CT imaging findings has been useful in showing focal increased FDG uptake seen on PET imaging at left inguinal region belonging to a bladder diverticulum activity.

DISCLOSURES

All authors assert that there are no conflicts of interest (both personnel and institutional) regarding specific financial interests that are relevant to the work conducted or reported in this manuscript.

REFERENCES

1. Fuerxer F, Brunner P, Cucchi JM, Mourou MY, Bruneton JN. Inguinal herniation of a bladder diverticulum. Clin Imaging. 2006; 30: 354-356.
2. Wagner AA, Arcand P, Bamberger MH. Acute renal failure resulting from huge inguinal bladder hernia. Urology. 2004; 64: 156-157.
3. Navarro Medina P, Alvarado Rodríguez A, Blanco Diez A, Jiménez García C, Artiles Hernández JL, Chesa Ponce N. Uropatía obstructiva bilateral secundaria a hernia vesical masiva. Actas Urol Esp. 2008; 32: 348–350.
4. Hinojosa D, Joseph UA, Wan DQ, Barron BJ. Inguinal herniation of a bladder diverticulum on PET/CT and associated complications. Clin Imaging. 2008; 32: 483-486.

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