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Inguinoscrotal bladder hernia detected by SPECT/CT on bone scintigraphy

Kemik sintigrafisinde SPECT/BT ile saptanan inguinoskrotal mesane hernisi

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Abstract

Inguinal hernia containing bladder is an uncommon and usually asymptomatic condition that occurs at the inguinal canal, scrotal sac or femoral canal. Incidentally detection of inguinal hernia of bladder by bone scintigraphy has been rarely presented in the literature and usually verified by CT or ultrasonography. Single photon emission computed tomography/computed tomography (SPECT/CT) is helpful to evaluate and locate precisely an area of abnormal activity that can be present on the planar scintigraphy.

In this report, we aimed to describe a case of inguinoscrotal bladder herniation diagnosed by SPECT/CT that is mimicking pubic bone metastasis on bone scintigraphy in a 65-year-old male patient with prostate cancer.

Keywords: Bone scintigraphy, Tc-99m MDP, bladder hernia, SPECT/CT, prostate cancer

Öz

İnguinal mesane hernisi, mesanenin inguinal kanal, skrotal kese veya femoral kanala fıtıklaşması sonucu ortaya çıkan, sık rastlanmayan ve genellikle belirti vermeyen bir durumdur. Kemik sintigrafisinde rastlantısal olarak saptanan inguinal mesane hernisi literatürde nadir olup genellikle tanı ultrasonografi veya bilgisayarlı tomografi ile doğrulanmıştır. Tek foton emisyonlu bilgisayarlı tomografi/bilgisayarlı tomografi (SPECT/BT) tetkiki planar görüntülemede saptanan anormal aktivitenin net yerleşiminin saptanmasında ve değerlendirilmesinde yararlı olmaktadır.

Bu çalışmada, 65 yaşındaki prostat kanseri tanılı erkek olguda saptanan, kemik sintigrafisinde pubik kemik metastazını taklit eden ve SPECT/BT görüntüleme ile tanı alan inguinoskrotal mesane hernisinin sunulması amaçlanmıştır.

Anahtar Sözcükler: *Kemik sintigrafisi, Tc-99m MDP, mesane hernisi, SPECT/BT, prostat kanseri*

Introduction

Inguinal hernia containing bladder is a rare and usually asymptomatic condition (1-3% of all inguinal hernias) that occurs when the urinary bladder herniates into the inguinal canal, scrotal sac or femoral canal (1, 2). Inguinal hernia is more frequent in men; on the other hand, femoral herniation occurs almost exclusively in women. The hernia sac may contain any portion of bladder (diverticulum, part of or entire bladder, ureter) (1, 3). Incidentally detection of inguinal hernia of bladder by bone scan has been rarely described in the literature and usually verified by CT or ultrasonography (3-7).

Bone scintigraphy is a highly sensitive diagnostic nuclear medicine imaging technique to evaluate skeletal metastasis in prostate cancer. However, its rather low specificity often requires further radiological imaging.

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Single photon emission computed tomography/computed tomography (SPECT/CT), is a hybrid imaging technique that combines a SPECT scan with a CT scan which is helpful to evaluate and locate precisely an area of abnormal activity that may be present on the planar scintigraphic imaging (8). Both sensitivity and specificity of non-invasive diagnostic approach in cancer patients are increased by the usage of SPECT/CT imaging (9).

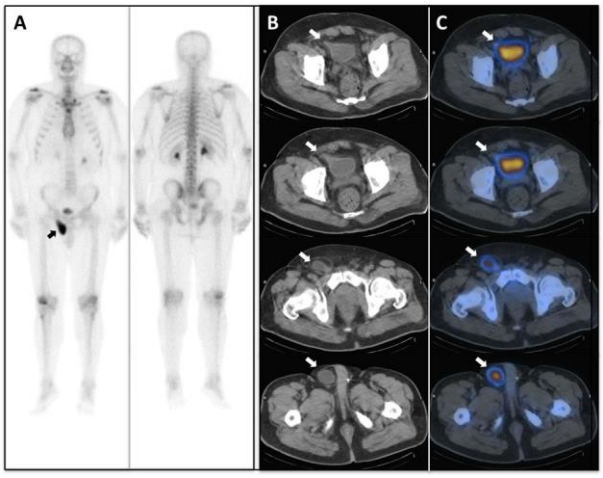

Figure-1A.B.C. On whole body planar images (A), an increased radiotracer uptake was observed over the inferior ramus of pubis on the anterior view (black arrow). Except for this suspicious area, no other pathological finding that can be compatible with metastatic disease of the skeleton was found on WBS. The selected axial CT (B) and fused SPECT/CT (C) images showed that the suspicious area was secondary to the inguinoscrotal hernia sac including bladder (white arrows).

Case Report

A 65-year-old male patient suffering from prostate carcinoma diagnosed by needle biopsy with a Gleason score of 7/10, was referred to department of nuclear medicine for a staging-intended bone scan. Whole body bone scan (WBS) was performed 2 hours after intravenous injection of 740 MBq (20 mCi) of technetium-99m (Tc-99m) methylene diphosphonate (MDP). Planar WBS was performed in both anterior and posterior projections using dual-head gamma-camera (Infinia Hawkeye 4®, GE Healthcare) with low-energy, parallel-hole collimators. On whole body images (Figure 1A) an increased radiotracer uptake was observed over the inferior ramus of pubis on the anterior view. Except for this suspicious area, no other pathological finding that can be compatible with metastatic disease of the skeleton was found on WBS. Right after the bone scan, SPECT/CT imaging was performed to evaluate the unusual foci. The selected axial CT and fused SPECT/CT images are included in Figure 1B and 1C. The hernia sac including bladder can be clearly seen on SPECT/CT images.

On inquiry, we found out that the patient is suffering from retention of urine, two-stage voiding for the last 4 years and he had been squeezing his scrotum to empty his bladder. On laboratory tests, his serum urea and creatinine levels were normal.

Written informed consent was obtained from the patient for publishing the individual medical record.

Discussion

Inguinal hernia containing bladder is a rare and usually asymptomatic condition. Inguinal hernia of bladder can be detected by nuclear medicine studies especially when urinary excreted radiopharmaceuticals like Tc-99m MDP or F-18 FDG (Fluorine-18 Fluorodeoxyglucose) were used (3-7). It has been usually verified by CT or ultrasonography after the nuclear medicine study (3-6).

Bone scintigraphy is a highly sensitive diagnostic nuclear medicine imaging technique that uses Tc-99m labelled phosphate analogues to evaluate skeletal metastasis in prostate cancer. Despite its high sensitivity it has a low specificity that usually requires further radiological imaging (X-ray, CT or magnetic resonance imaging).

SPECT/CT is helpful in evaluating and localizing the abnormal activity that may be present on the planar scintigraphic imaging (8). In nuclear medicine practice, the diagnostic value of planar bone scan is increased by the usage of SPECT/CT in patients with prostate cancer (9). In our patient, on the planar bone scan, inguinoscrotal bladder herniation mimics bone metastasis, so the activity at the pubic bone could be reported as metastasis or further imaging modalities were required after scintigraphic imaging to identify the foci if concomitant pelvic SPECT/CT imaging was not

applied. SPECT/CT overcomes the practical difficulties of planar bone scan by better attenuation correction, higher specificity and precisely localization of abnormal activity. Both sensitivity and specificity of non-invasive diagnostic approach in cancer patients are increased by the usage of hybrid imaging modalities like SPECT/CT and positron emission tomography/computed tomography (PET/CT) (9). CT component of hybrid imaging gives the ability to fusion the functional data with anatomical information for accurately localizing the abnormal activity on WBS and enables to differentiate between abnormal and physiological structures (9,10).

This case highlights the importance of SPECT/CT imaging to accurately interpret any unusual finding observed on planar scintigraphy.

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