Journal of Medical Imaging and Radiation Sciences 45 (2014) 59-62

Journal of Medical Imaging and Radiation Sciences

Journal de l'imagerie médicale et des sciences de la radiation

www.elsevier.com/locate/jmir

Case Report

Tampon Appearance on Bone Scan Imaging: Case Report

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ABSTRACT

The role of a nuclear medicine diagnostic bone scan is well established and the influence of potential artifacts well documented. This case provides an insight into an unusual artifact associated with a tampon in situ and highlights the clinical relevance of single-photon emission computed tomography/computed tomography imaging in differentiating uncommon artifacts from potential pelvic pathology.

RÉSUMÉ

Le rôle de la scintigraphie osseuse en médecine nucléaire est bien établi et l'influence des artéfacts potentiels bien documenté. Cette étude examine un artéfact inhabituel associé à un tampon in-situ et fait ressortir la pertinence de la TEM/TDM pour distinguer les artéfacts non courants d'une pathologie pelvienne possible.

Keywords: Menstruation; artifact; tampon; single-photon emission computed tomography/computed tomography imaging; bone scintigraphy

Introduction

The nuclear medicine bone scan is a well-established procedure [1–3] and remains one of the most common nuclear medicine procedures performed across the globe [4]. Despite its long-standing and extensive clinical utility, technical errors can undermine its diagnostic integrity [4]. In addition, the radiopharmaceutical used for a nuclear medicine bone scan may accumulate outside the skeletal system in nonosseous structures, resulting in occasional incidental pathologic findings or a confounding diagnosis from an artifactual finding [2]. Urinary excretion of the radiopharmaceutical can also result in visualization of the normal urinary system, potential incidental identification of pathology of the urinary system, and a potential artifact associated with urine contamination.

The female reproductive tract is a less common source of reported artifact though 'uterine blush' observed during the blood flow and blood pool phases of the three-phase bone scan is a common occurrence [5, 6]. Indeed, the hyperemic appearance of the uterus (Figure 1) has been reported to occur in all phases of the menstrual cycle (menstrual, proliferative, and secretory) and in as many as 78% to 100% of postmenarcheal/premenopausal women [5, 6].

Case Information

A 35-year-old female breast cancer survivor presented for her annual whole-body bone scan and for the evaluation of idiopathic thoracic spine pain. The patient was administered with 920 MBq (24.9 mCi) of 99m-technetium methylene diphosphonate (99mTc MDP). Whole-body imaging was performed on a Siemens ECam 3.5 hours after radiopharmaceutical injection. Focally intense radiopharmaceutical accumulation was noted centrally in the pelvis superimposed on the bladder and extending inferior to the bladder. The accumulation was more prominent posteriorly (Figure 2). Single-photon emission computed tomography (SPECT) with low-dose computed tomography (CT) imaging was performed of the pelvis on a SPECT/CT camera (GE Discovery). The SPECT study showed a well-circumscribed nonosseous accumulation of the radiopharmaceutical outside the urinary system consistent with an artifact (Figure 3). Fused images of the SPECT/CT confirmed focal accumulation of the radiopharmaceutical localized to the vagina (Figure 4). Clinical history confirmed the menses in this patient, and the scan appearance is consistent with absorption of radiotracer by the in situ tampon.

Discussion

Although the female reproductive tract is a common variant (uterine blush) on early phases of a three-phase bone

The author declares no conflict of interest.

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1939-8654/$ - see front matter
http://dx.doi.org/10.1016/j.jmir.2013.06.022

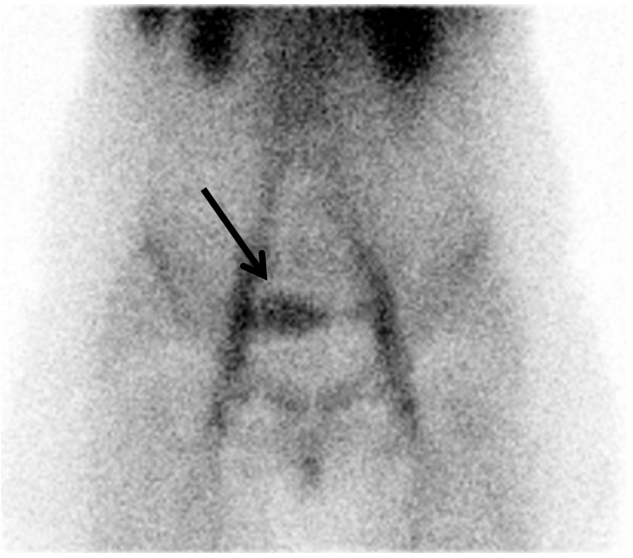

Figure 1. The very commonly seen uterine blush associated with the reproductive female pelvis. Uterine blush typically shows focal blood pool superior to the bladder about the midline.

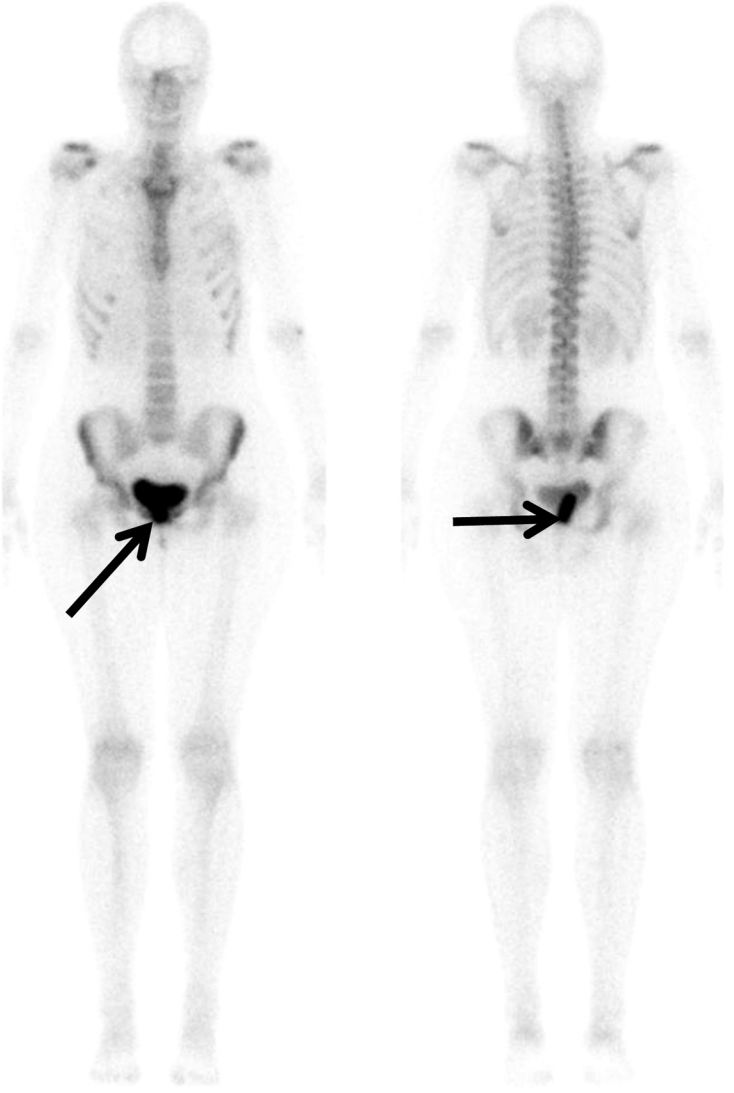

Figure 2. The whole-body bone scan showing focal radiopharmaceutical accumulation in the pelvis superimposed on bladder and extending inferior to bladder.