The Radioactive String Sign: A Contamination Artifact In Tc-MDP Bone Imaging For Prostate Carcinoma

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Citation

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Abstract

The nuclear medicine bone scan is a diagnostic test that is primarily concerned with detecting skeletal abnormalities. An important skill which is necessary for accurately interpreting the nuclear medicine bone scan is the ability to differentiate between contamination artifacts and true pathology. Urinary contamination is one source of contamination seen on bone scans that can confound image analysis. Knowledge of such scan artifacts may provide insight for improving future scan acquisition technique and image interpretation. We present the whole body bone scan images of a 72 year-old male with prostate cancer to demonstrate urinary contamination of a jogging pants drawstring.

INTRODUCTION

The nuclear medicine bone scan is a diagnostic test that is primarily concerned with detecting skeletal abnormalities. An important skill which is necessary for accurately interpreting the nuclear medicine bone scan is the ability to differentiate between contamination artifacts and true pathology. Urinary contamination is one source of contamination seen on bone scans that can confound image analysis. Knowledge of such scan artifacts may provide insight for improving future scan acquisition technique and image interpretation.

CASE REPORT

We present the whole body bone scan images of a 72 year-old male with prostate cancer to demonstrate urinary contamination of a jogging pants drawstring.

Figure 1

Figure 1 a & b

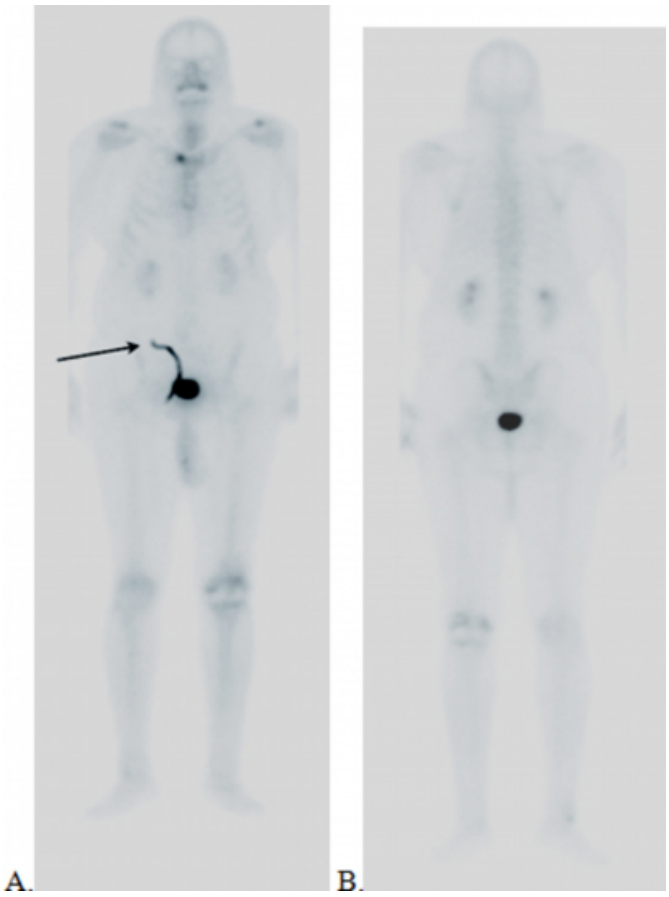

Figure 1 (A & B): Three hours following the intravenous administration of 25.0 mCi of Tc99m MDP, whole body

planar images were acquired in the anterior (left) and posterior (right) projections. The whole body images demonstrate no lesions that are suspicious for metastatic disease. The focus of increased tracer uptake in the right sternoclavicular joint is attributed to degenerative disease given its location and lack of suspicious activity in the spine and pelvis. Increased uptake in the shoulder joints and right ankle are also due to degenerative disease. Increased tracer uptake surrounding the photopenic left knee prosthesis likely represents bone remodeling from a year-old knee prosthesis. The focus of increased tracer uptake in the left maxilla is consistent with patient's dental history of a recently extracted tooth. The anterior image demonstrates a curvilinear focus of intense tracer activity superimposed on the right hemipelvis (see black arrow) as well as a curvilinear photopenic defect around the neck. These findings are not appreciated in the posterior projection. On physical exam, the patient was wearing a metallic necklace in the same distribution as the photopenic defect surrounding the neck, confirming that this defect was an artifact from the jewelry.

Figure 2

Figure 2 a & b

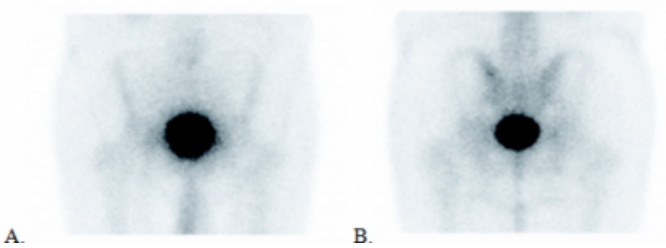

Figure 2 (A & B): Anterior (left) and posterior (right) planar images of the pelvis after the patient's pants are removed. The curvilinear focus of intense tracer activity in the right pelvis disappears indicating that the focus was urine contamination on one of the drawstrings of the patient's jogging pants. Since Tc99m MDP is renally excreted, the possibility of urinary contamination of the clothes and body surface should always be considered when interpreting "hot spots" on bone scans, especially in the region of the pelvis [1,2,3].

References

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