

# Accumulation of $^{99m}\text{Tc}$ Phytate in the pyelocalyceal system in a patient with chylous ascites — a pitfall resolved by SPECT/CT

Hadis Mohammadzadeh Kosari , Somayeh Barashki , Yasaman Fakhar , Emran Askari , Ramin Sadeghi   
 Nuclear Medicine Research Center, Mashhad University of Medical Sciences, Mashhad, Iran

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## Abstract

We reported  $^{99m}\text{Tc}$  phytate accumulation in the pyelocalyceal system of the kidney in the lymphoscintigraphic images of a 3.5 months-old male infant with chylous ascites, which was mistaken with the site of lymph leakage. SPECT/CT localized activity in the para-aortic region to the renal pelvis and on delayed images, this was disappeared. Our case illustrates the added value of SPECT/CT for the differentiation of possible false-positive findings in lymphoscintigraphy.

**KEY words:** lymphoscintigraphy;  $^{99m}\text{Tc}$  phytate, chylous ascites; leakage; pyelocalyceal system; SPECT/CT

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## Introduction

A lymphoscintigraphy can demonstrate chyloperitoneum and localize the chyle leakage focus, which enables the surgeon to establish a suitable operative plan for the injured lymphatics. In all cases, it is important to recognize pitfalls to prevent misinterpretation. Herein, we represent a momentous pitfall, that has been resolved by SPECT/CT and has not been mentioned hitherto in the literature.

## Case report

A 3.5 months-old male infant with a history of esophageal atresia and repaired imperforate anus, presented with slowly progressive abdominal distention. Because the ascites was chylous in nature, the patient was referred to our nuclear medicine department to identify the possible primary site of chylous leakage.

Planar and SPECT/CT images from the thoraco-abdominopelvic region were performed 20 and 120 minutes after 2mCi subcutaneous injections of  $^{99m}\text{Tc}$  phytate (in two divided aliquotes, 0.2 mL for each injection) in thighs. A dual-head variable angle gamma camera (GE healthcare) with LEHR (low energy high-resolution) collimator (using  $^{99m}\text{Tc}$  photopeak with 20% window) was used

for imaging. The planar images showed a focal zone of activity on the right side of the paravertebral region (plane A in Fig. 1); which was compatible with the right pyelocalyceal system in the SPECT/CT adjacent to the 12<sup>th</sup> thoracic and 1<sup>st</sup> lumbar vertebrae (plane B in Fig. 1), while, we were wrong with the site of lymph leakage on planar images.

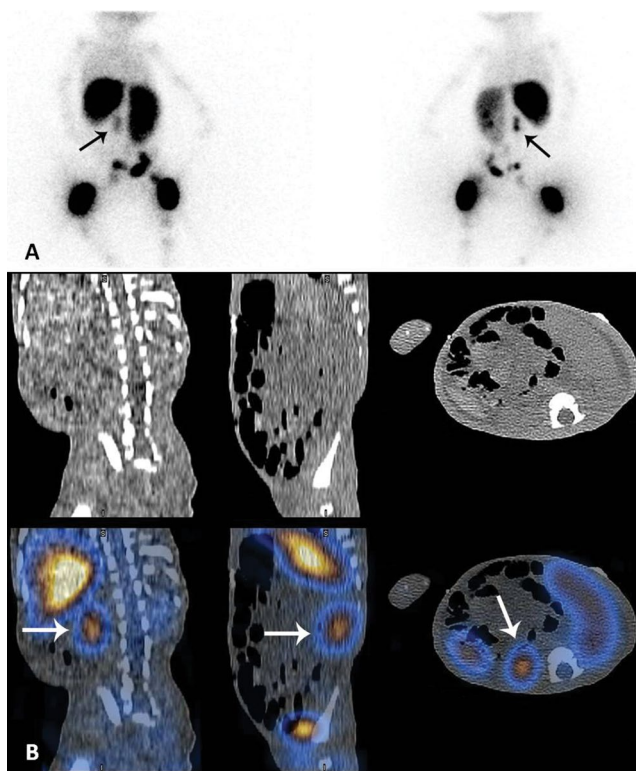
Delayed lymphoscintigraphic images of the thoraco-abdominopelvic region were also performed 2 hours post-injection with the same imaging protocol. The activity disappeared (Fig. 2).

## Discussion

$^{99m}\text{Tc}$  phytate is commonly used for liver and spleen scan and sentinel node mapping of many solid tumors [1–3]. Besides, lymphoscintigraphy with  $^{99m}\text{Tc}$  phytate can demonstrate chyloperitoneum and can be used to evaluate the site of leakage in chylous ascites, which is very hard to localize by a conventional imaging modality like computed tomography (CT) scan [4–8]. Renal excretion of this radiotracer (most likely due to renal excretion of a  $^{99m}\text{Tc}$  phytate metabolite), can cause a misdiagnosis on lymphoscintigraphy images [1, 9].

Our case showed a focal area of activity on the right side of the paravertebral region that was interpreted as a possible site of chyle leakage. This focal activity was confined to the right pyelocalyceal system by SPECT/CT. Our case showed the role of SPECT/CT in resolving the diagnostic interference of normal biodistribution of the  $^{99m}\text{Tc}$  phytate, which can be misleading in the interpretation of the lymphoscintigraphy images.

*Correspondence to:* Ramin Sadeghi, Nuclear Medicine Research Center, School of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran, e-mail: sadeghir@mums.ac.ir; raminsadeghi1355@yahoo.com



**Figure 1.** A. Whole-body Planar images in anterior and posterior view. The suspicious focus for the site of the leak (black arrow) was seen in the right paravertebral region. B. SPECT/CT axial, coronal, and sagittal images confirm the focal activity to the right pyelocalyceal system (white arrow)

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**Figure 2.** Delayed whole body Planar images in anterior and posterior view. The activity disappeared (arrow), but inguinal lymph nodes remained on both sides. Two foci of activity in the right injection site are due to patient movement during image acquisition (arrowhead)