

Tc-99m phytate lymphoscintigraphy: An excellent method for diagnosis of underlying cause of chylous ascites

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ABSTRACT

We reported a 14 months old boy referred for evaluation of chylous ascites to our nuclear medicine department. Tc-99m Phytate was injected subcutaneously in his calves and whole body images as well as abdominal SPECT were performed. The SPECT images could localize an area of several intestinal lymphangiomas in the abdominal region. The abnormal region was surgically resected and the patient ascites symptoms subsided consequently.

Key words: Lymphoscintigraphy; Chylous ascites; SPECT

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INTRODUCTION

Lymphoscintigraphy is a non-invasive method for evaluation of the lymphatic system [1-3]. In addition to sentinel node mapping [4, 5], this technique can be used for lymphedema detection and evaluation [6]. Congenital malformations of the lymphatic systems are among the best targets for lymphoscintigraphic evaluation [7, 8].

In the current case report, we presented a 14 months old boy referred for evaluation of chylous ascites. Correct diagnosis was achieved by lymphoscintigraphy of the patient.

Procedures followed were in accordance with the ethical standards of the local ethical committee of Mashhad University of Medical Sciences and with the Helsinki Declaration of 1975, as revised in 2008.

CASE REPORT

A 14 months old boy was referred to our department with a history of chylous ascites since his 3 month of age. Abdominal ultrasonography reported a large multiloculated cystic mass on the left side of the

abdomen. Analysis of the ascites fluid had confirmed the presence of chyle in the abdominal cavity.

Lymphoscintigraphy was done in order to localize the cause of chylous ascites. 500 μ Ci of 99m Tc-Phytate was injected in each calf subcutaneously. Immediately after injection of the radiotracer, dynamic imaging of the abdomen was performed (60 sec/frame for 15 minutes) using a dual head gamma camera equipped with low energy high resolution collimator and Tc-99m photopeak.

Dynamic images showed a suspicious faint activity in the upper part of the abdomen (arrow in Figure 1).

One hour after injection, planar imaging was performed in anterior, posterior and lateral views (10 min/view from the abdomen). The spot image showed faint activity in the upper abdomen (arrow in Figure 2). Bone marrow and growth plates are also visible due to Tc-99m Phytate uptake [2].

SPECT imaging was done 2 hours post injection (64 steps, 40 second/step, 128 \times 128 matrix processed by iterative method). SPECT images showed a localized abnormal accumulation of tracer in the upper-abdomen with an inclination to the left side (arrows in Figure 3).

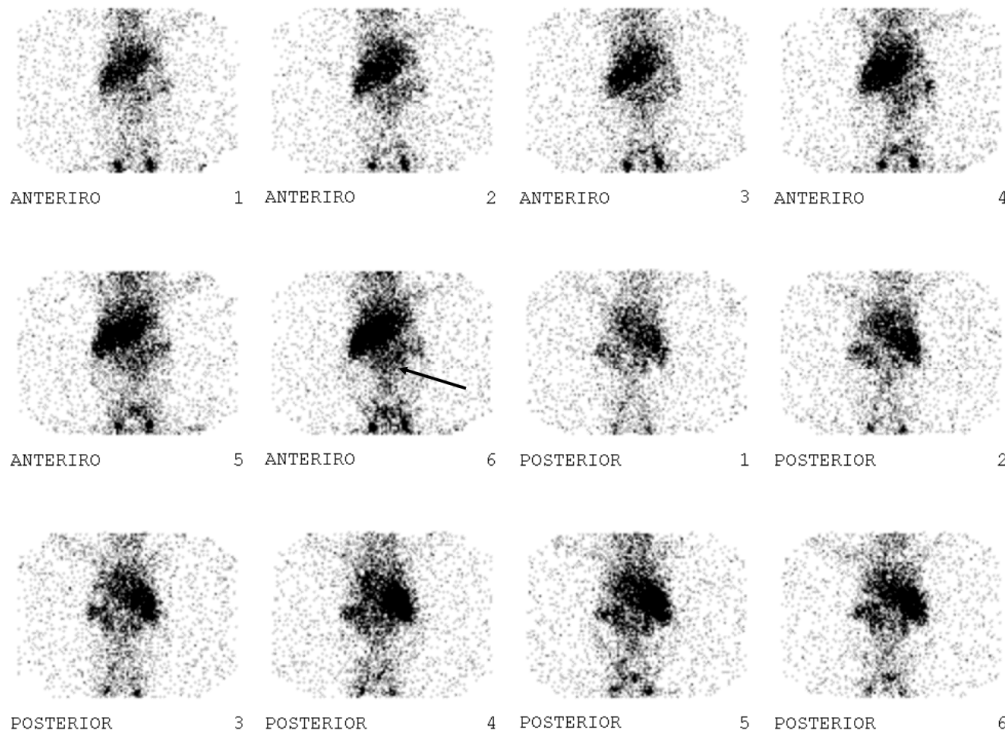


Fig 1. Dynamic images of the patient. Note a mild increased uptake in the mid-abdominal area (arrow).

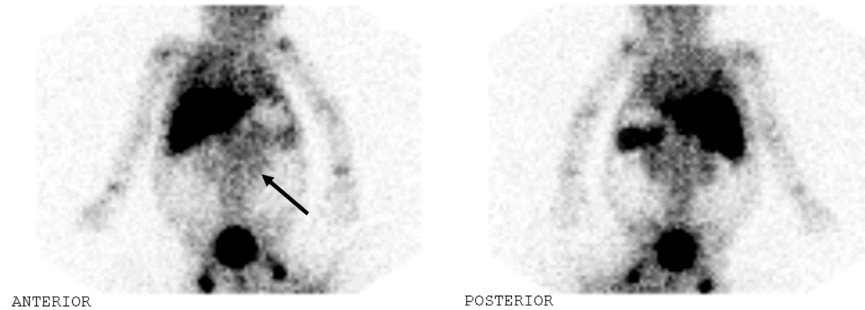


Fig 2. Anterior/Posterior spot images of the patient. Mild increased activity is also apparent on the spot view images (arrow). Tc-99m Phytate uptake is visible in the bone marrow and growth plates.

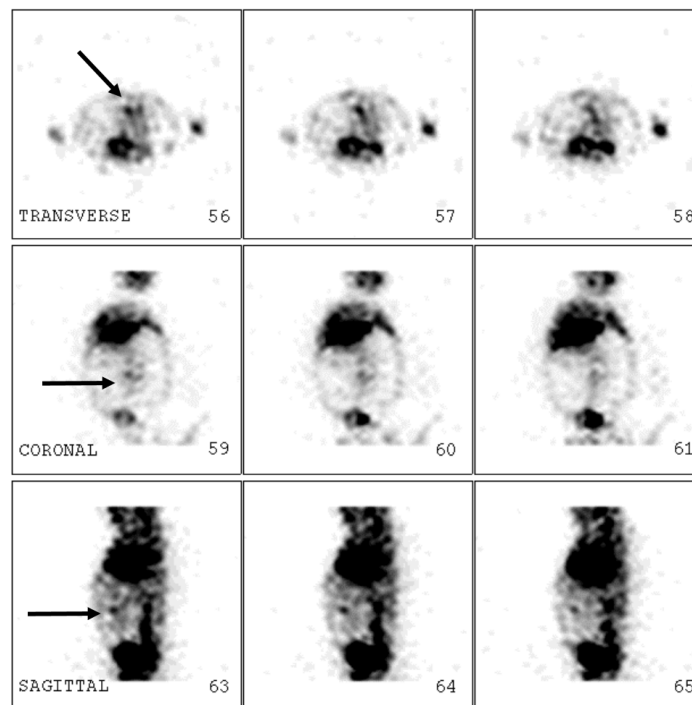


Fig 3. Reconstructed SPECT images of the patient. Abnormal activity in the mid-abdomen is obviously visible (arrows)

The patient underwent surgery and several intestinal lymphangiomas were detected in the jejunal part of the small intestine corresponding to the SPECT findings. The abnormal lymphatic tissue was resected and the patient remained without ascites post-surgically.

DISCUSSION

Chylous ascites is a rare form of ascites with incidence of 1 in 20000 admission in the large hospitals [9, 10]. This incidence has increased in recent years which can be due to availability of diagnostic tools as well as prolonged survival of patients with abdominal cancers. Chylous ascites is divided to two major categories according to

underlying causes: Traumatic and nontraumatic [11, 12].

Chylous ascites is an uncommon disease especially in childhood. The most common cause of chylous ascites in the infants and children is congenital abnormalities [13]. Many diagnostic methods are used for evaluation and confirming this condition such as: ultrasonography, CT scanning, analysis of ascites fluid, lymphangiography and laparoscopy [10, 11, 14].

Lymphangiomatosis is a rare lymphatic disease which can be limited to a specific organ or involve a more generalized process. In the gastrointestinal system, lymphangiomatosis can cause protein losing,

ascites, intestinal obstruction, etc. As it is rare disease with no specific symptoms and signs, misdiagnosis and delayed in diagnosis is very usual. Definitive diagnosis requires a thorough medical history and physical examination as well as imaging such as lymphoscintigraphy [15, 16].

Lymphoscintigraphy is an excellent method for diagnosis and localization of lymphatic leakage in chylous ascites in pediatric as well as adults patients [17], as this functional method no adverse effect has been reported. In addition, lymphoscintigraphy is also well accepted by the patients [3, 18-22]. Although planar images can localize the abnormality, SPECT (especially SPECT/CT) imaging is a superior method for this purpose [17]. Lymphoscintigraphy can help surgeons to define the best plan of surgery and assess the response to treatment too [10].

CONCLUSION

In conclusion, lymphoscintigraphy is an available non-invasive method for localization of abnormalities underlying chylous ascites. Although planar imaging can be of use, SPECT imaging is more advantageous with higher accuracy in localization of pathologies such as intestinal lymphangiomas.

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