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Identification of Concomitant Iatrogenic Lower Extremity Lymphedema and Pelvic Lymphatic Leak on Lymphoscintigraphy and SPECT/CT

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DISCLOSURE

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ABSTRACT

Pelvic lymphatic leak and lower extremity lymphedema are well-known complications of pelvic surgery and/or radiation therapy. We report a cervical carcinoma patient status post hysterectomy and lymphadenectomy who developed concomitant left lower extremity lymphedema and pelvic lymphatic leak identified on lymphoscintigraphy and SPECT/CT.

Keywords

Lymphoscintigraphy, SPECT/CT, lymphatic ascites, lymphedema

INTRODUCTION

Lower extremity lymphedema and pelvic lymphatic ascites are well-recognized complications of pelvic surgical procedures, commonly secondary to lymphadenectomy in the treatment of gynecological malignancies (*1,2*). Noninvasive lymphoscintigraphy is an established imaging modality for characterization of extremity lymphedema. We report a patient with cervical carcinoma status post radical hysterectomy, pelvic lymphadenectomy, and radiation therapy who presented with bilateral lower extremity swelling. Tc-99m filtered sulfur colloid lymphoscintigraphy and SPECT/CT confirmed lower extremity lymphedema and concomitant pelvic lymphatic ascites.

CASE REPORT

A 52-year-old woman with a history of cervical carcinoma status post radical hysterectomy and pelvic lymphadenectomy with radiation therapy presented with bilateral lower extremity swelling. Physical examination revealed moderate non-pitting edema of the lower extremities, left greater than right, with associated dermal thickening, hyperkeratosis and xerosis. Lower extremity lymphoscintigraphy was performed with subcutaneous injection of 18.5 MBq Tc-99m filtered sulfur colloid into the second web space of both feet. Planar images at one hour after injection showed appropriate dynamic radiotracer drainage to bilateral ilioinguinal lymph nodes. Three-hour delayed planar images demonstrated dermal backflow in the left thigh compatible with lymphedema. Incidentally, extra-nodal radiotracer distribution was noted in the pelvic floor extending superiorly along the right pelvic sidewall and paracolic gutter (Fig. 1). SPECT/CT demonstrated abnormal extra-nodal radiotracer spreading in the dependent portion of the pelvis, which corresponded with small volume of pelvic ascites on diagnostic CT scan (Fig. 2.) A diagnosis of iatrogenic left lower extremity lymphedema with concomitant asymptotic pelvic lymphatic leakage was achieved.

DISCUSSION

The reported incidence of lower extremity lymphedema secondary to treatment (surgery and/or radiation therapy) in gynecologic malignancy ranges from 10-49% (*3,4*). Lymphoscintigraphy has been adopted as the primary imaging modality in detection of lymphedema. Despite the lack of standardized imaging protocols and poor spatial resolution, lymphoscintigraphy has demonstrated outstanding sensitivity and specificity in the diagnosis of

lymphedema (*5*). Meanwhile, pelvic lymphatic ascites is an under-recognized complication following pelvic lymphadenectomy. The manifestation of pelvic lymphatic leakage ranges from trace, asymptomatic pelvic fluid to frank abdominal distention. It is usually a self-limited process, and may require conservative management. Lymphoscintigraphy is superior to CT in characterization of lymphatic fluid in pelvis. With advance of the lymphedema treatment, it is imperative for nuclear radiologists to be familiar with diagnosis and staging of lymphedema to support appropriate clinical decision making.

Conclusion

Lymphoscintigraphy is a reliable, noninvasive imaging modality in diagnosis of extremity lymphedema and pelvic lymphatic leak.

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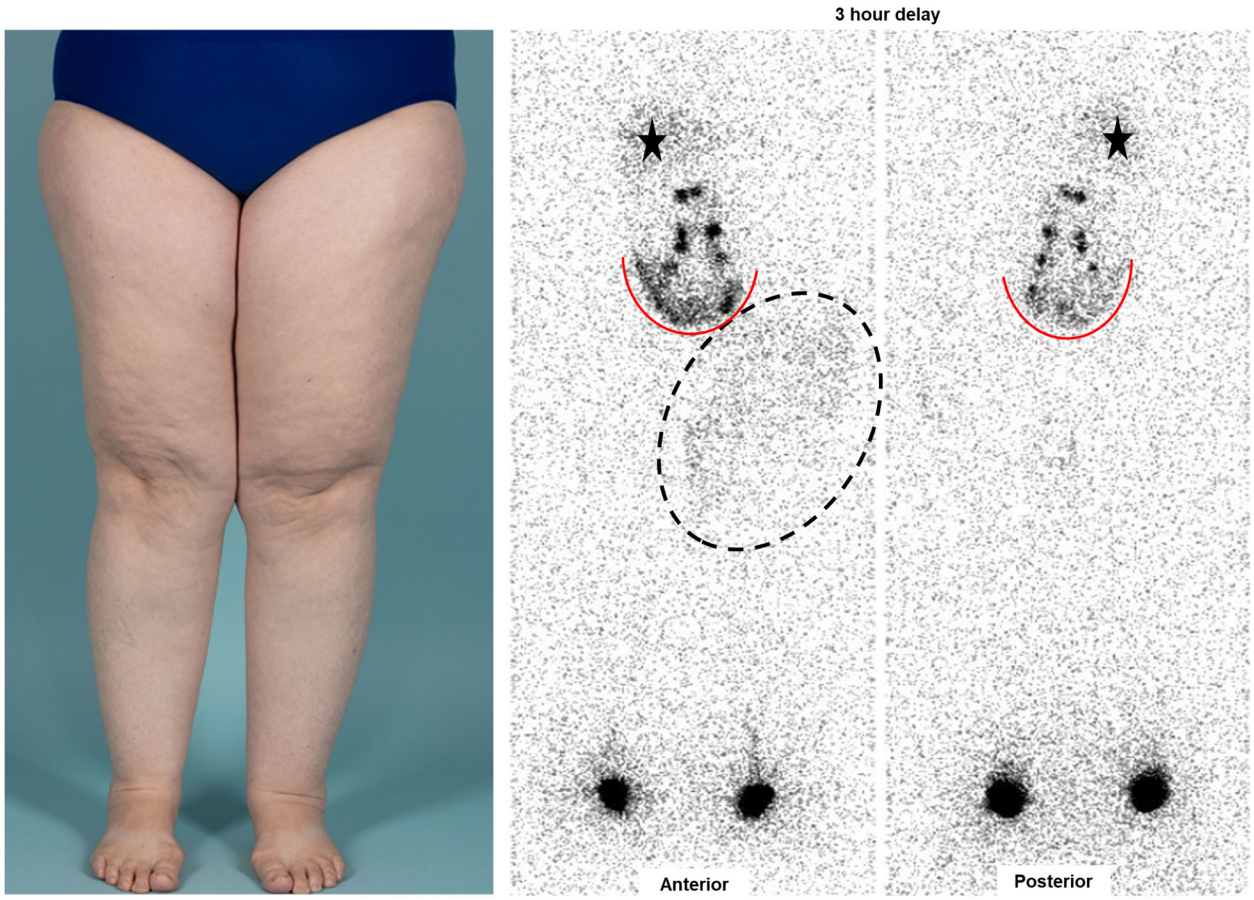

Figure 1. Photograph of the lower extremities shows asymmetric swelling of left upper thigh (left). Three-hour delayed planar images show left upper thigh dermal backflow, more prominent on the anterior view (elliptical dashed circle). In addition, there is abnormal U-shaped extra-nodal radiotracer distribution in the pelvis (red curves). * indicates liver.

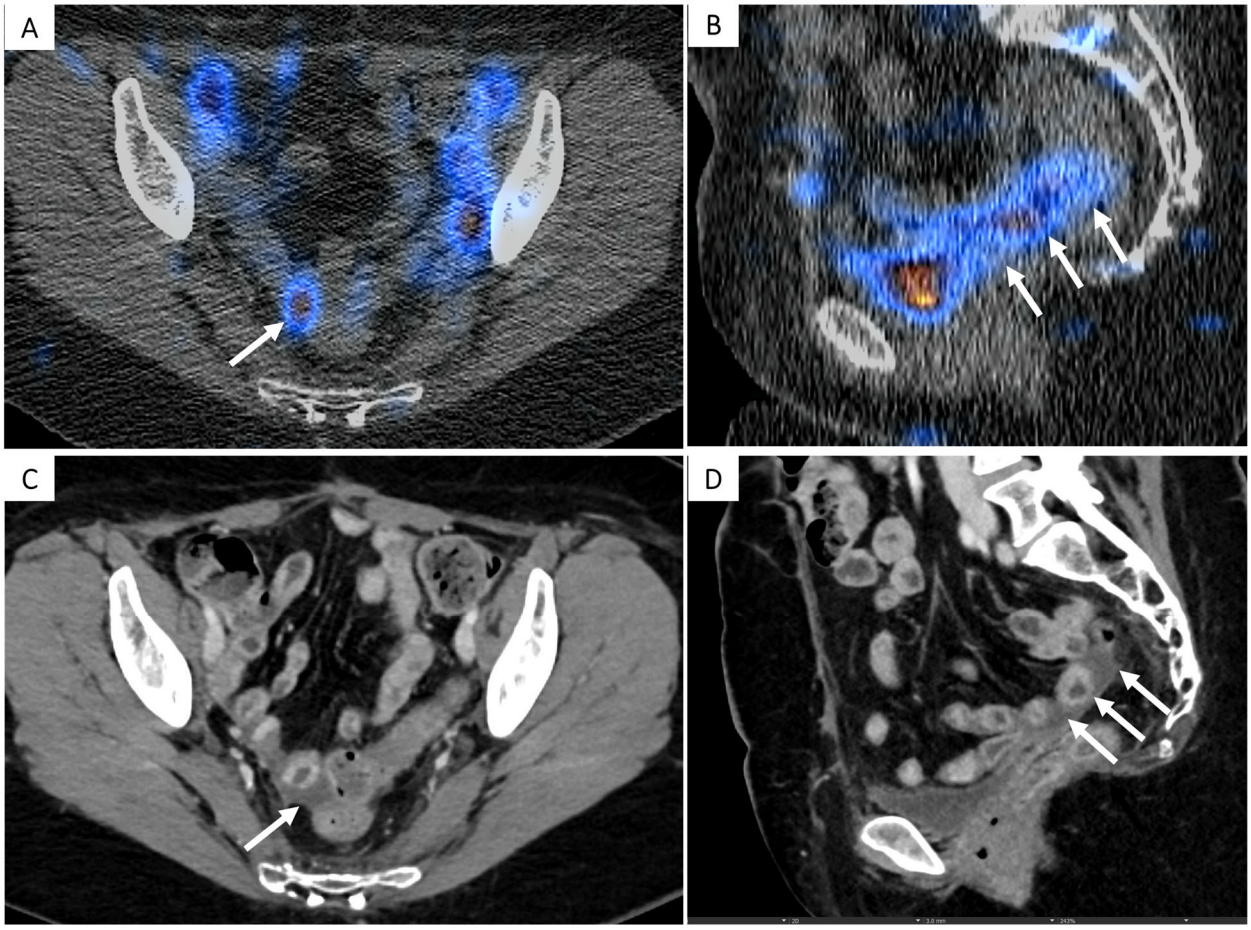

Figure 2. Fusion axial and sagittal SPECT/CT images of the pelvis (Fig. A, B) demonstrate extra-nodal tracer distribution along the pelvic floor (arrows) with corresponding trace pelvic free fluid on contrast-enhanced diagnostic CT images (Fig. C, D).