

## Inguinoscrotal lymphatic reflux detected by lymphoscintigraphy

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We performed lymphoscintigraphy with  $^{99m}\text{Tc}$ -human serum albumin in a case of suspected lymphedema of the right leg after inguinal lymph node dissection. Dermal backflow of the leg and lymphocele at the inguinal chain were observed, and lymphatic reflux into the scrotum was also delineated. The scintigraphy could demonstrate a persistent lymphatic problem under conservative treatment, and could lead the physician to conduct surgical treatment. Scintigraphic demonstration of the inguinoscrotal lymphatic reflux has not been previously reported.

**Key words:**  $^{99m}\text{Tc}$ -HSA, lymphoscintigraphy, inguinoscrotal reflux

### INTRODUCTION

SECONDARY LYMPHEDEMA of legs often occurs because of lymphatic obstruction by lymph node metastases from malignant tumors, postradiation fibrosis and surgical procedures. Lymphoscintigraphy should be the first choice for the assessment of this problem because this is less invasive than contrast lymphography.

In this report, we present a case of lymphedema which occurred after inguinal lymph node dissection, showing lymphatic reflux into the scrotum detected by lymphoscintigraphy.

### CASE REPORT

A 58-year-old man received a right inguinal lymph node dissection because of metastases of epitheloid sarcoma of the right thigh. Five days later, mass-like swelling of the right inguinal region was found and the right leg appeared to be enlarged. The penis and scrotum became gradually swollen. X-ray CT showed a water-density round mass at the right inguinal region (Fig. 1), and yellowish clear fluid composed of plasma filtrate was obtained from the mass by a needle tap. Lymphedema and lymphocele were suspected and conservatively treated with frequent taps

and subcutaneous injection of a mixture of factor XIII and fibrinogen for three weeks. These treatments, however, appeared to be ineffective and the risk of infection grew.

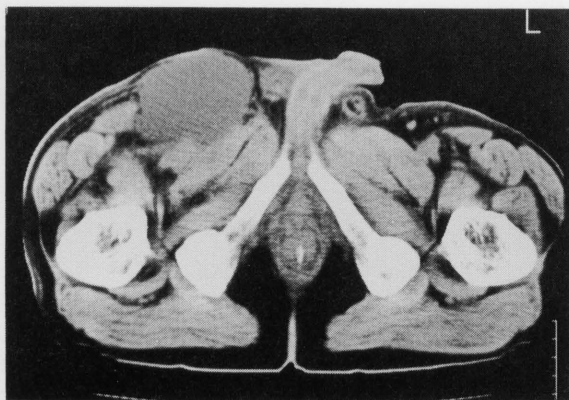
Lymphoscintigraphy was performed for the assessment of the lymphatic drainage and to see whether active lymphatic leakage into the lymphocele was persisting.  $^{99m}\text{Tc}$ -human serum albumin (74 MBq/0.1 ml) was subcutaneously injected into the first interdigital web space of each foot and images were obtained at 20 min and 90 min postinjection (Fig. 2). Although lymphatic flow up to the inguinal chain was observed, obstruction in the right inguinal region and dermal backflow in the right leg were seen. A pool of the tracer in the right inguinal region indicated the persistence of active lymphatic leakage into the lymphocele. The tracer accumulation in the scrotum indicated lymphatic reflux and the communication between the inguinal region and scrotum could also be seen. With the assurance of an active problem confirmed by the scintigraphy, contrast lymphography was performed and showed that the contrast media entered the mass lesion (Fig. 3). Lymphocele and draining lymph ducts were successfully ligated by means of visual confirmation with dye injection under the contrast lymphography.

### DISCUSSION

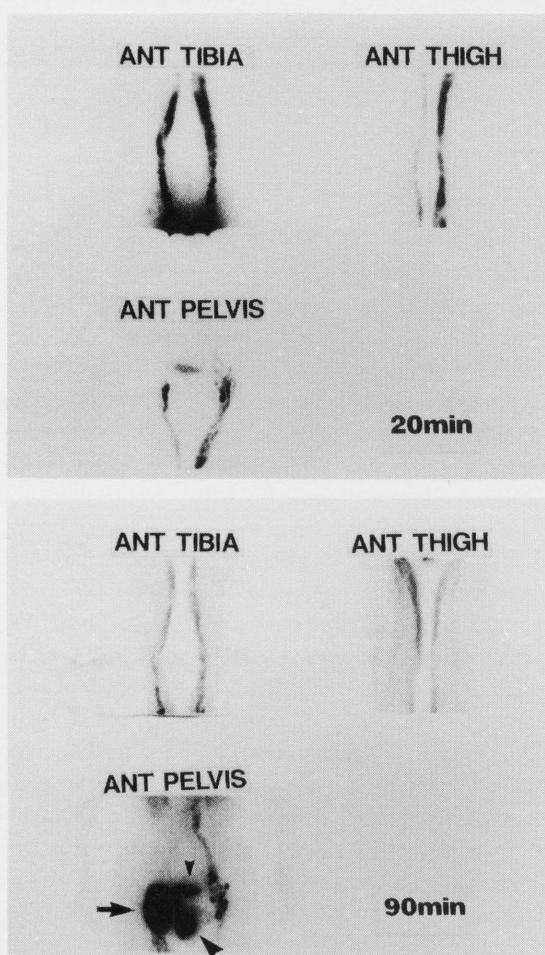
Lymphoscintigraphy is a useful tool for the assessment of patients with swelling of the legs. This method should be the first choice because it is less invasive than contrast lymphography which may injure the lymphatic system by

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**Fig. 1** X-ray CT demonstrates round mass lesion with water-density content. Yellowish clear fluid composed of plasma filtrate was obtained from the lesion, confirming lymphocele.



**Fig. 2**  $^{99m}\text{Tc}$ -human serum albumin lymphoscintigraphy imaged at 20 min and 90 min after the subcutaneous injection into the interdigital web space. Obstruction of the lymphatic flow and lymphocele (arrow) are seen in the right inguinal region. Intense tracer accumulation can be also seen in the scrotum (large arrowhead) below the activity in the urinary bladder (small arrowhead), indicating reflux of the lymphatic flow. Communication between the inguinal region and scrotum is demonstrated as a linear radioactivity.



**Fig. 3** Contrast lymphography shows lymphatic leak into the mass lesion in the right inguinal region.

the procedure itself.<sup>1</sup> Another advantage of lymphoscintigraphy over contrast lymphography is that scintigraphy can provide dynamic information about lymphatic flow.

In the present case, lymphoscintigraphy showed the obstruction of lymphatic flow along with dermal backflow and a pool of the tracer in the mass lesion, indicating lymphedema and lymphocele. In addition to these typical findings, inguinoscrotal lymphatic reflux was demonstrated. Since lymphatic flow from the scrotum drains into the superficial inguinal chains, inguinoscrotal reflux may occur due to the obstruction of the inguinal or upper lymphatics. Although scrotal lymphedema is not unusual in filariasis, it is rarely due to secondary lymphedema such as malignancy, surgery or radiation.<sup>2,3</sup>

In conclusion, lymphoscintigraphy could effectively reveal a persistent lymphatic problem under conservative treatment, and could lead the physician to conduct surgical treatment. Scintigraphic demonstration of the inguinoscrotal lymphatic reflux has not been previously reported.

## REFERENCES

1. Collins PS, Villavicencio JL, Abreu SH, Gomez ER, Coffey JA, Connaway C, et al. Abnormalities of lymphatic drainage in lower extremities: a lymphoscintigraphic study. *J Vasc Surg* 9: 145-152, 1989.
2. Lim STK, Ngan H, Wong K, Ong GB. Leakage of lymph through scrotal skin. *J Urol* 125: 889-890, 1980.
3. Smith JH, von Lichtenberg F, Lehman JS. Parasitic diseases of the genitourinary system. In Cambell's urology, Walsh PC, Retik AB, Stamey TA, Vaughan ED Jr (ed.), 6th ed., Philadelphia, W.B. Saunders Company, pp. 883-927, 1992.