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^{99m}Tc-Nannocolloid Localization of Lymphorenal Fistula Causing Chyluria

Maseeh-uz-Zaman, Riffat Parveen Hussain, Khalil Ahmed Khan, Gufran Khan and M. Nadeem Ahmad

ABSTRACT

Chyluria is an abnormal condition in which chyle appears in the urine because of a fistulous communication between the lymphatics and the urinary tract. It is not life-threatening and spontaneous regression is reported in 50% of cases. Lymphangiography has been the main imaging modality for localization of the site of fistula, but it is invasive and requires expertise. Lymphoscintigraphy using Tc-99m labelled colloid is a safe, non-invasive, reproducible technique, which bears less radiation exposure. A 67-year-old male presented with 7-month history of chyluria following a spinal surgery. Bilateral lower limb lymphoscintigram revealed sluggish lymph flow in the left lower limb and visualization of tracer in the left kidney consistent with lymphorenal fistula. Subsequent cystography revealed appearance of chylous urine from left ureter. Patient refused surgery.

Key words: Chyluria. Lymphoscintigraphy. Lymphorenal fistula.

INTRODUCTION

Chyluria may present as chylous clot, chylous clot retention, hematuria, flank pain, dysuria, weakness, fever and weight loss. There is a high content of fat, albumin and fibrin and a varying amount of erythrocytes in the urine. Chyluria is a late manifestation of filariasis, a parasitic infestation endemic in South East Asia. Other associated conditions include repeated retroperitoneal infections, especially tuberculosis, trauma, genitourinary or gastrointestinal tumours, malignancy of the thoracic duct and thyroid, ureteric stone, hydrocele, inguinal hernia and pregnancy.¹

Lymphangiography has been the main imaging modality in investigating chyluria, chyloperitoneum and chylothorax. However, it requires tedious cannulation of lymphatics, invasive and is not readily reproducible. It can also result in local tissue necrosis, fat embolism to the lungs, hypersensitivity reaction and exacerbation of lymphedema by the contrast material.² Lymphoscintigraphy using ^{99m}Tc labelled colloid delineates the pattern of lymphatic drainage, is fast, non-traumatic and has no known side effects.^{3,4} The management of chyluria is challenging.⁵ Localisation of anastomotic channel between renal and lymphatic system is mandatory for surgical correction and reduced disease associated morbidity.⁶

We are reporting a case of chyluria developed after spinal surgery in which lymphoscintigraphy was used to localise the lymphorenal fistula as the cause of chyluria.

CASE REPORT

A 67-year-old male underwent laminectomy over L3-4 level. After 7 months, he presented with complaint of chyluria and repeated urinary retention. On examination, his vital signs were normal. The complete blood picture, LFTs (liver function tests), serum creatinine and serum proteins were within normal limits. Urine was reported milky in color with enormous fat and cellular components. Ultrasound of abdomen showed right renal cyst and mild prostatic enlargement.

Lymphoscintigram was performed with 37 MBq (Mega Becquerel-0.5 cc volume) of ^{99m}Tc (Technetium-99m) labelled Nannocolloid [Nannocol, GE Healthcare] injected subcutaneously as 0.25 cc aliquot in 2nd and 3rd inter-digital spaces of both feet. After 3 hours delayed anterior and posterior whole body images were acquired using double head digital gamma camera with LEHR (Low Energy High Resolution) collimators and scan speed of 10 cm/minute. Three hours whole body images (Figure 1) revealed reduced traveling and relatively less outlined left inguinal lymph nodes. Normal lymphatic flow and well outlined inguinal lymph nodes were seen in the right lower limb. Tracer was also visualised in the left kidney with delineation of para-aortic lymph nodes as well. A follow-up cystography confirmed the appearance of chylous urine from the left ureter. Patient refused surgery. At six months follow-up, patient again presented with chyluria but with reduced severity and reduced episodes of urinary retention and

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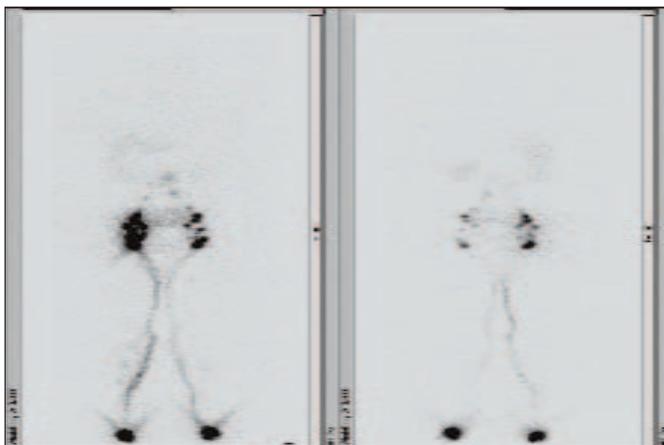


Figure 1: Bilateral lower limb lymphoscintigram (3 hour) shows sluggish flow over left side, less well-outlined left inguinal lymph nodes and appearance of tracer in left kidney (i.e. left lym).

denied any specific pharmacological or surgical treatment.

DISCUSSION

Collateral lymphatic circulation is an important clinical pathophysiological phenomenon which signifies an obstructed lymph outflow and depends on location of the obstruction and on developmental anatomy of the lymphatic system. Chyluria is an abnormal condition in which chyle appears in the urine because of a fistulous communication between the lymphatics and the urinary tract. Although, the most common cause is parasitic with infestation by *Wuchereria bancrofti*, non-parasitic chyluria may arise due to thoracic duct stricture or direct injury to the kidney with formation of lymphatic-urinary fistulas. Obstruction of the larger lymphatic vessels may be caused by trauma, tuberculosis, abscess, or neoplasms, such as malignant lymphoma. Other infrequent causes include lymphangiectasy, pelvic lipomatosis, and compression of the thoracic duct by a pseudoaneurysm of the thoracic aorta, or even pregnancy.^{7,8}

It is not life-threatening and in 50% spontaneous regression is reported.⁹ Other methods of treatment are sclerotherapy,⁹ somatostatin therapy¹⁰ and surgery. The main goal for the surgeon is to recognize pre-operatively

not only lymphatic obstruction, but also existing lymphatic collateral pathways, and try to preserve them. Lymphangiography has been the main imaging modality but it is invasive and requires expertise for cannulation and significant radiation exposure. But in recent years, radionuclide lymphangiogram of both lower limbs has essentially replaced the lymphangiography. Like in this case report, abnormal tract was visualized indirectly due to appearance of radiotracer in the left kidney and subsequent cystoscopy revealed appearance of chylous urine from the left ureteric orifice. Therefore, lymphoscintigraphy using Tc-99m labelled colloid is a safe, non-invasive and reproducible technique and bears less radiation exposure.

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