

Radionuclide renography: a seldom used test for the detection of vesicoenteric fistula

To the Editor: We have noticed that radionuclide renography, although a very useful diagnostic test for the detection of vesicoenteric fistulas, is seldom reported as such in articles published in nuclear medicine journals, including the *Hell J Nucl Med* (1-5). We now present a 7 year old boy with a history of vesical exstrophy of the suprapubic fissure type, urethral hypoplasia, and imperforate anus, who underwent anorectoplasty and urinary reconstruction using Mitrofanoff procedure because of an hypoplastic urethra. The patient referred to us for evaluation of a possible vesicoenteric fistula, not diagnosed by other modalities. The patient reported occasions of urge for defecation and anal passage of clear fluid admixed with fecal matter; suspicious for being urine. The physical examination of the patient was unremarkable. The patient used clean intermittent catheterization (CIC) in order to empty his bladder.

Conventional imaging, such as barium enema, retrograde urethrography, and intravenous urography (IVU), cystoscopy and colonoscopy failed to reveal any vesicoenteric fistula. Even methylene blue injected into the urinary bladder showed

no staining on the pledgets inserted into the rectum.

The parents and the surgeon were unwilling to perform another surgery due to lack of enough evidence for an urinary fistula.

After the intravenous injection of 111 MBq of ^{99m}Tc -ethylene dicysteine (^{99m}Tc -EC), radionuclide renography was performed in the supine position for 40 min. Anterior and posterior views were acquired using a dual-head γ -camera (E.CAM; Siemens) in the 180° setting (Fig. 1a). Another set of images was acquired after placing an urinary catheter in the reconstructed bladder through appendicostomy (Fig. 1b). Delayed images even after 7 hours were negative for vesicoenteric communication (Fig. 2a). It was only after 8 hours, that the accumulation of the renal tracer outside the urinary tract was detected (Fig. 2b). The patient underwent another surgery, a vesicorectal fistula was found and repaired. Symptoms stopped after the operation.

Rectosigmoid is the most common location for colovesical fistulas [6]. The most common causes of vesicoenteric fistulas in adults are Crohn's disease and diverticulitis, followed by erosion

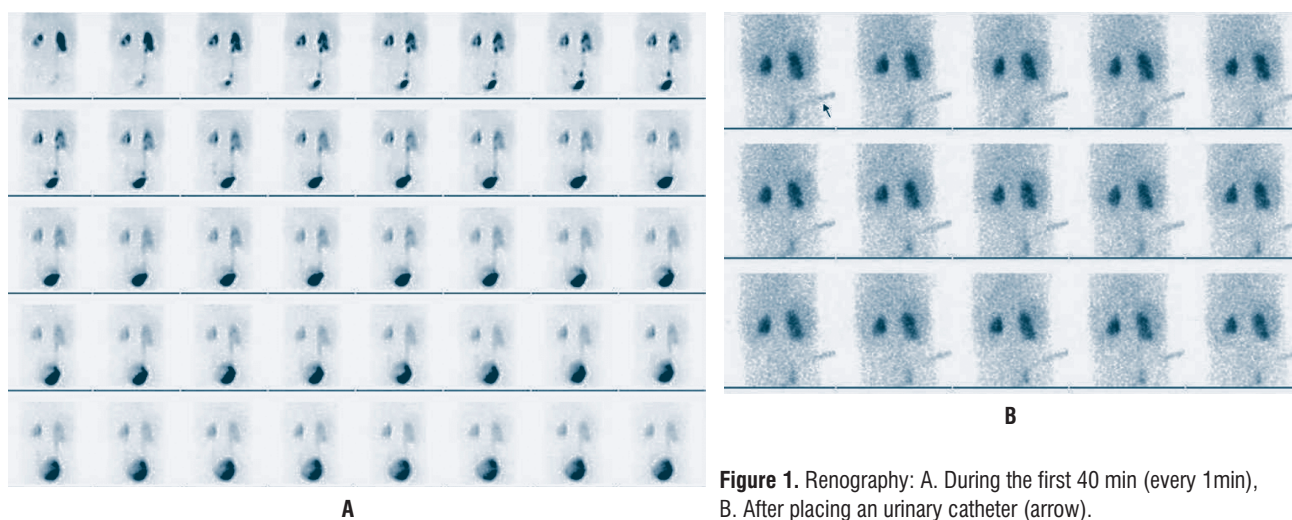


Figure 1. Renography: A. During the first 40 min (every 1 min), B. After placing an urinary catheter (arrow).

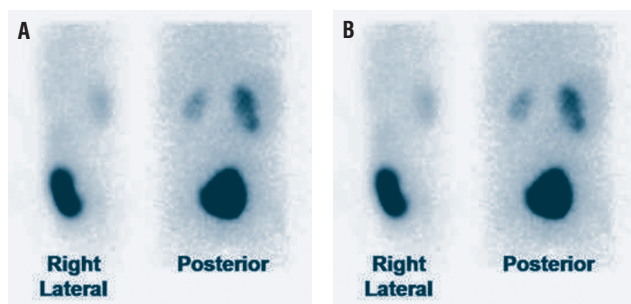


Figure 2. A. Right lateral and posterior static images after 7 h. B. Anterior and posterior static images after 8 h, showing the urinary-enteric fistula.

of a colorectal or bladder malignancy [7]. Most vesicoenteric fistulas in children are congenital and associated with anorectal malformation or cloacal anomalies [8]. The clinical manifestations are principally urological in the form of recurrent urinary infection and terminal pneumaturia. The most useful diagnostic techniques are cystoscopy serial voiding cystourethrography (SVCU), retrograde urethrography and pyelography. In up to 50% of patients with vesicoenteric fistula, conventional diagnostic methods fail. Uro-radiological and endoscopic methods are unreliable and symptoms are often nonspecific [9]. In these conditions radionuclide renography can be very useful [10].

This abnormal accumulation of the tracer extended in the colon from the cecum to the left colic curve. Despite this finding, the fistula was located in the rectum as shown on surgery. This can be attributed to the stimulant effect of the urine on the colon, which can result in rapid peristalsis and bidirectional movement of the radioactive urine along the colon. This case stresses the importance of delayed images up to 8 hours, in radionuclide renography, for the detection of urinary fistulas. Radionuclide renography is a simple and readily available method for diagnosing vesicoenteric fistulas.

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