

Bowel visualization on the lymphoscintigraphy images of a bladder cancer patient due to inadvertent injection of the tracer in the rectal wall

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ARTICLE INFO

Article type:
Case Report

Article history:

Received: 6 Dec 2020

Revised: 1 Feb 2021

Accepted: 5 Feb 2021

Keywords:

Sentinel lymph node biopsy

Bladder

Nuclear medicine

SPECT/CT

ABSTRACT

The effectiveness of the sentinel lymph node mapping in patients with Urothelial carcinoma of the bladder is under investigation. Single photon emission computed tomography (SPECT/CT) and intraoperative sentinel node biopsy using gamma probe are performed to detect the exact location of the sentinel lymph node to be dissected during the surgery.

In this case report, a 73-year old man with high grade urothelial carcinoma was referred to our nuclear medicine department for SPECT/CT, four hours after injection of the radiotracer through cystoscopy .

SPECT/CT could not reveal any sentinel node; however, one sentinel lymph node was detected and harvested in the right external iliac region during surgery. SPECT/CT revealed unusual accumulation of tracer in large bowel which was due to severe adhesion of rectum and bladder, and inadvertent injection of the radiotracer into the rectal wall .

During the sentinel lymph node procedure, the tracer should be injected with extreme caution and lymphoscintigraphy post injection may help detection of any injection failures.

► Please cite this paper as:

Ghorbani HR, Zarifmahmoudi L, Sadeghi R, Soltani S, Aghae A. Bowel visualization on the lymphoscintigraphy images of a bladder cancer patient due to inadvertent injection of the tracer in the rectal wall. *Asia Ocean J Nucl Med Biol.* 2021; 9(2): 177-179. doi: 10.22038/AOJNMB.2021.54064.1370

Introduction

Sentinel lymph node biopsy is an accepted part of management in staging the regional lymph nodes for patients with melanoma, breast cancer, gynecological, and gastrointestinal malignancies (1-4).

The tumor status of sentinel lymph nodes is determined through histopathologic evaluation and reveals the pathologic status of the regional lymphatic field. Sentinel lymph node mapping procedure has revealed beneficial effects in staging, detecting the lymphatic route for spreading tumor cells, and the lymphadenectomy extent (4, 5). The diagnostic value of the sentinel lymph node mapping in some urological malignancies including urothelial carcinoma of the bladder

and renal carcinoma is still under investigation and further extensive investigations are needed (6-8).

In this case report, we showed the accuracy of lymphoscintigraphy post injection in detecting the methodological complications which might lead to sentinel lymph node detection failure through SPECT/CT.

Case presentation

A 73-year old man with a history of high grade urothelial carcinoma was referred for sentinel lymph node biopsy to our department. Four hours after peri-tumoral injection of 2 mCi (in two divided doses, 0.5 mL each) Tc-99m Phytate through cystoscopy, planar lymphoscintigraphy and SPECT/CT were done. Unusual accumulation of the

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tracer in the abdomen was noted on the planar images of the patient (Figure 1). SPECT/CT of the abdominopelvic area showed accumulation of the tracer in the large bowel (Figure 2). During the surgery (18 hours after the injection), severe adhesion of the rectal wall and bladder was noted (large arrow). This was also demonstrated on the

SPECT/CT images of the patient (small arrow). SPECT/CT could not reveal any sentinel node; however, one sentinel lymph node was detected and harvested in the right external iliac region during surgery. The reason of adhesion was a history of abdominal surgery ten years before (Figure 3).

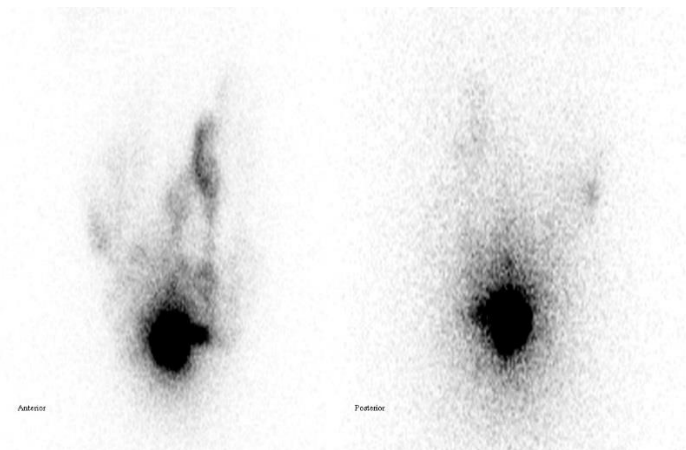


Figure 1. Planar lymphoscintigraphy of the patient: anterior and posterior

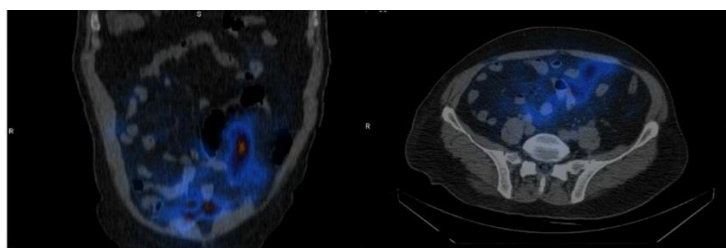


Figure 2. Lymphoscintigraphy SPECT/CT

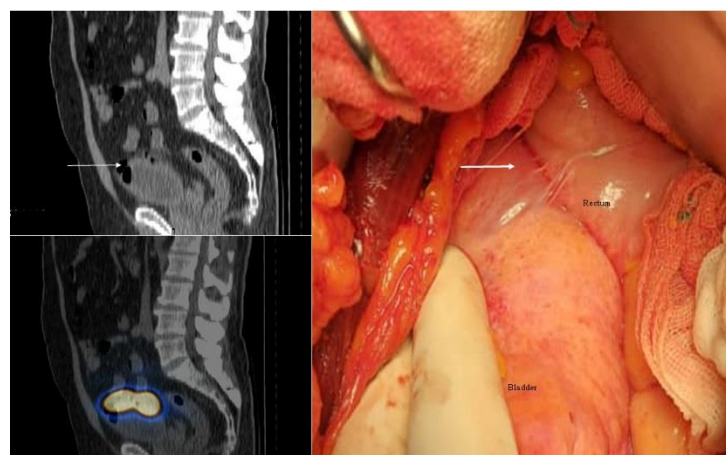


Figure 3. Adhesion of the rectal wall and bladder in intraoperative image (large arrow) and on the CT slices (small arrow)

Discussion

In this case report, lymphoscintigraphy and SPECT/CT detected the accumulation of the radiotracer in the abdomen and severe adhesion of the rectal wall and bladder. The

reason of large bowel visualization on lymphoscintigraphy was inadvertent injection of the radiotracer into the rectal wall due to the adhesion. The history of previous abdominal surgery can be the reason of the

adhesion. No sentinel lymph node could be detected through SPECT/CT; however, one sentinel lymph node was detected and harvested in the right external iliac region during surgery. Sentinel node biopsy has been used in various cancers (8, 9). Different techniques, including preoperative and intraoperative detecting approaches using radiotracers, blue dye and indocyanine green (ICG) lymphangiography have been used to reveal the accuracy and feasibility of the sentinel lymph node mapping in patients with urothelial cancer of the bladder (10, 11). However, the injection of the radiotracer is one of the major parts of the sentinel lymph node mapping procedure and can be challenging as shown in our case. The tracer should be injected with extreme caution and lymphoscintigraphy post injection may help detection of any injection failures. Our case underscores the importance of lymphoscintigraphy (especially SPECT/CT) in sentinel node biopsy.

Funding source

This study was supported by vice chancellor of research of Mashhad University of Medical Sciences with the approval number of 940295.

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