I^{131} Accumulation in Hydrocele in the Setting of Metastatic Papillary Carcinoma Thyroid

Abstract

^{131}I is widely used for the treatment of goiter and residual and metastatic thyroid cancer. Uptake of ^{131}I is mainly due to the expression of sodium-iodide symporter in the target tissues. Incidental third space accumulation in the pleural and pericardial cavity can be encountered due to passive diffusion of tracer into these cavities. We present an interesting finding of ^{131}I accumulation in the scrotal hydrocele in a 70-year-old patient with a metastatic classical variant of papillary thyroid carcinoma, who was treated with 200 m Ci of ^{131}I.

Keywords: *Iodine scan, papillary carcinoma thyroid, radioiodine uptake, scrotal hydrocele*

SJ Seetharam, Vishnukumar Rajaraman, Nandini Pandit

Department of Nuclear Medicine, Jawaharlal institute of Post Graduate Medical Education and Research, Puducherry, India

A 70-year-old male was diagnosed with a classical variant of papillary thyroid carcinoma with bilateral lung and multiple skeletal metastases. He was treated with 200 mCi of ^{131}I. Posttherapy scan [Figure 1a and b] done 5 days after the therapy showed intense tracer uptake in the thyroid bed, left clavicle region, and bilateral chest. A moderate degree of diffuse uptake was noted in the scrotal region. It was initially overlooked as urine contamination. After eliciting the history of hydrocele, a regional single photon emission computed tomography/computed tomography (SPECT/CT) was acquired to solve the suspicion. SPECT/CT [Figure 1c and d] of the scrotal region showed tracer accumulation in the scrotal hydrocele.

The mechanism of iodine uptake is mediated by the sodium-iodide symporter (NIS).[1] It is mainly expressed in the thyroid, salivary glands, gastric mucosa, lactating mammary gland, lacrimal glands, choroid plexus, ciliary bodies, skin, placenta, and thymus. Lower levels of NIS expression are seen in the prostate, ovaries, adrenal glands, and lungs.[2,3] False-positive findings in ^{131}I scan can be classified under functional uptake secondary to NIS expression, radioiodine retention, nonthyroid neoplasm, inflammatory, or infectious uptake and contamination. SPECT/CT was helpful to identify these unusual ^{131}I concentrations.[4] Non-NIS-dependent ^{131}I retention was reported in sialolithiasis, nasolacrimal duct cyst, Zenker's diverticulum, hiatal hernia, urinary tract diverticulum, and pathological serous collections in the bronchogenic cyst, ovarian cyst, hepatic cyst, thymic cyst, pleuro-pericardial cyst, and pericardial cavity. It can be due to passive diffusion and slow clearance from the serous cavities.[5-10] ^{131}I concentration in the scrotal hydrocele was also be attributed to the same mechanism of passive diffusion.[9] In our case, clinical history and examination elicited scrotal hydrocele. Urine contamination was ruled out, and finally, the SPECT/CT confirmed the site of uptake.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand

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Address for correspondence:
Dr. Vishnukumar Rajaraman, Department of Nuclear Medicine, Jawaharlal Institute of Post Graduate Medical Education and Research, Puducherry, India.
E-mail: viar793@gmail.com

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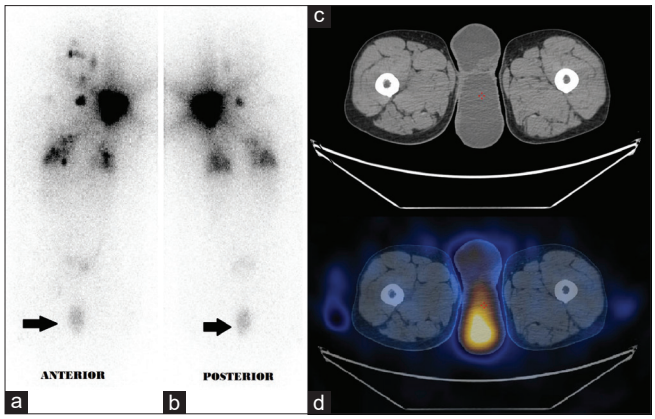

Figure 1: 131| whole body scan images (a and b) in the anterior and posterior view show tracer accumulation in the scrotal region (arrow). Corresponding single-photon emission computed tomography/computed tomography images in the axial section (c and d) show tracer accumulation in hydrocele

that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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