A Pitfall of I-131 Whole Body Scans Interpretation: Mucinous Cyst in External Genitalia: Original Image

I-131 Tüm Vücut Sintigrafisi Yorumlamada Bir Tuzak: Eksternal Genitalyada Müsinöz Kist

İlknur AK, MD,[a]
İnci USLU, MD,[a]
Ceren YILDIZ, MD,[b]
Sinan ÖZALP, MD[b]

Departments of [a]Nuclear Medicine, [b]Obstetric and Gynecologic Oncology, Eskişehir Osmangazi University Faculty of Medicine, Eskişehir

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Yazışma Adresi/*Correspondence:*
İlknur AK, MD,
Eskişehir Osmangazi University Faculty of Medicine,
Department of Nuclear Medicine,
Eskişehir,
TÜRKİYE/TURKEY
ilknur_ak@yahoo.com

ABSTRACT As in all other arenas of nuclear medicine, the correct interpretation of whole body scans with I-131 requires a thorough understanding of normal radiotracer biodistribution. We report a false-positive radioiodine accumulation due to a musinous cyst in the external genitalia on I-131 whole body scan of a patient with papillary thyroid carcinoma. The images showed a large, round radioiodine accumulation that corresponded to a well circumscribed and stalked lesion that originated from the inner surface of left labium majus (4 x 5 cm in size) of the external genitalia. Complete resection and subsequent histopathological examination identified this mass as a musinous cyst. To the best our knowledge, it is the first report of a mucinous cyst in the external genitalia exhibiting I-131 uptake.

Key Words: Iodine; whole body imaging ; cystadenoma, mucinous

ÖZET Nükleer tıbbın diğer alanlarında olduğu gibi, I-131 tüm vücut sintigrafisini doğru yorumlama da normal biyodağılımın doğru bilinmesini gerektirir. Papiller tiroid karsinomlu bir hastanın eksternal genitalyasında mevcut bir müsinöz kist nedeni ile I-131 tüm vücut tarama sintigrafisinde görülen yanlış pozitif radyoiyot tutulumunu sunuyoruz. Tüm vücut tarama görüntülerinde hastanın eksternal genital bölgesinde, sol labiyum majustan kaynaklanan, 4 x 5 cm boyutlarında, saplı, düzgün sınırlı kitle lezyonuna karşılık gelen alanda, yoğun I-131 tutulumu izlendi. Bu kitlenin komplet rezeksiyonu ve patolojik incelemesi müsinöz bir kist olduğunu gösterdi. Bilgilerimize göre bu olgu, eksternal genital bölgede müsinöz bir kistte I-131 tutulumu gösteren ilk olgudur.

Anahtar Kelimeler: İyot; tüm vücut görüntüleme; müsinöz kistadenom

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A 42-year-old woman with thyroid carcinoma (papiller carcinoma with tall cell variant) underwent total thyroidectomy and radioactive iodine ablation in 2007. There was no accumulation except the thyroid remnant in the neck on post-treatment imaging. One year after ablation, I-131 whole body scan was performed after a 4-week period of thyroid hormone withdrawal and limited ingestion of foods containing iodine (Figure 1). Serum TSH level was 55 mIU/L and there was no detectable thyroglobulin in blood. I-131 images showed a large, round accumulation of radioiodine in the external genital area. We questioned the patient for any lesions in the genital area. She suffered from a progressively growing mass in her external genital area over one-year. Because she had no symptoms (no pain), she did not go to the doctor. On gynecologic examination, there was a well circum-

scribed and stalked lesion that originated from the inner surface of left labium majus (4x5 cm in size). Complete resection and subsequent pathology identified this mass as a musinous cyst (Figure 2).

A thorough understanding of the normal, benign, and pathologic biodistribution of iodine is imperative for the nuclear medicine physician. This knowledge leads to the accurate determination of the presence of a metastatic or recurrent carcinoma, and may even facilitate the accurate detection of an undiagnosed condition. To avoid unnecessary therapeutic interventions, it is extremely important to distinguish properly false-positive sites of I-131 localization. False positive uptake is elucidated by careful examination of the patients and further studies. Specific sources of false positive lesions cited in the literature include physiologic nasopharyngeal secretions, parotid duct ectasia, renal cysts, perspiration, inflammatory lung disease such as bronchiectasis, pleural and pericardial effusions, frontal sinus mucocele, bronchogenic cyst and mucinous cystadenoma.[1-6] To add to this list, we report a case of mucinous cyst localized in external genitalia exhibiting I-131 uptake. To the best our knowledge, it is the first report of a mucinous cyst in the external genitalia exhibiting I-131 uptake.

FIGURE 2: The figure shows a well circumscribed and stalked lesion that originates from the inner surface of left labium majus (4 x 5 cm in size). Complete resection and subsequent histopathological examination identified this mass as a mucinous cyst.

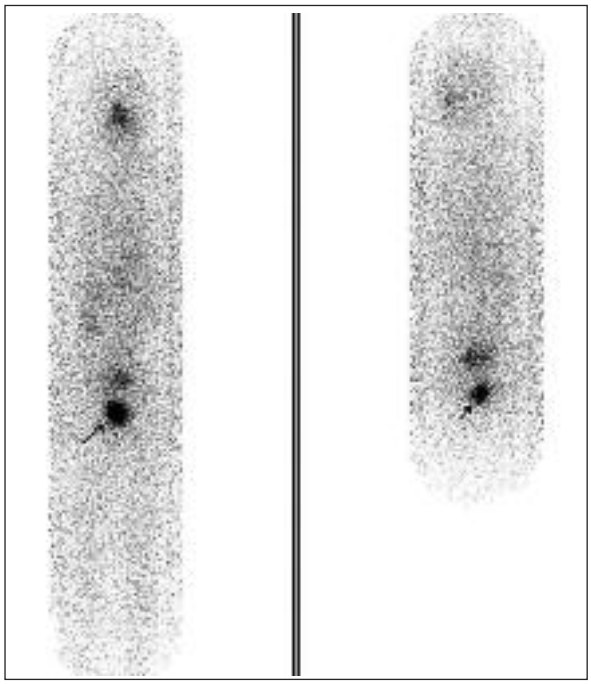

FIGURE 1: Anterior **(A)** and posterior **(B)** I-131 whole body scans was performed after a 4-week period of thyroid hormone withdrawal and limited ingestion of foods containing iodine. After the oral administration of 185 MBq (5 mCi) I-131, whole body images were obtained at 48 hours using high-energy parallel collimators. The images showed a large, round accumulation of radioiodine in the external genital area. Note physiologic uptake in the nasopharynx and the bladder.

All of the cases above represent an example of a fluid collection that accumulates iodine. The mechanism is not known, although the sodium iodide symporter (NIS) is the most likely known mediator of this process.[7] Such accumulation has been attributed to the slow exchange of water and chemical elements between the cysts and their surrounding extracellular/extravascular environment. While high iodine levels are present in their environment (extracellular, extravascular space) soon after the administration of NaI, a small amount is diffused (either passively or even actively by the lining of the cyst cells) and trapped inside the cysts; there, NaI stays longer (slow exchange) than in extracellular space, which is rapidly cleared due to effective urinary excretion of iodine.[8] The same mechanism can explain the visualization of the mucinous cyst localized in external genitalia of our case.

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