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

A 42-year-old woman with thyroid carcinoma (papillary 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 mucinous 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. To add to this list, we report a case of mucinous cyst localized in external genitalia exhibiting I-131 uptake. To the best of our knowledge, it is the first report of a mucinous cyst in the external genitalia exhibiting I-131 uptake.

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. 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. The same mechanism can explain the visualization of the mucinous cyst localized in external genitalia of our case.
REFERENCES


