

Accurately localizing the thyroid tissue in mature cystic teratoma of ovary by single-photon emission computerized tomography/computerized tomography

Yusuf Demir, Rıfık Üçler¹, İsmet Alkış², Gülay Bulut³

Departments of Nuclear Medicine, ¹Endocrinology, ²Obstetrics and Gynecology and ³Pathology, School of Medicine, Yüzüncü Yıl University, Van, Turkey

ABSTRACT A 30-year-old woman with hyperthyroidism was admitted to hospital. Although increased thyroid function was found, the gland was normal in ultrasonography (USG). Additionally, thyroid iodine uptake and Tc-99m pertechnetate scintigraphy was normal. Abdomen USG detected a cystic pelvic mass in left ovary. A whole-body scan was performed 48 hours after oral ingestion of 29.6 MBq (0.8 mCi) I-131 (iodine-131) revealed a round structure located to the left lower abdomen. Iodine uptake was detected in this cyst which was compatible with functional thyroid tissue demonstrated by SPECT/CT. The patient was underwent surgical operation and histopathology confirmed mature cystic teratoma. Accurate localization and depiction of thyroid tissue in ovary mass was provided with SPECT/CT.

Keywords: Hyperthyroidism, single-photon emission computerized tomography/computerized tomography, struma ovarii

A 30-year-old woman was using propylthiouracil for 3 years due to hyperthyroidism. Although increased thyroid function was found, the gland was normal in ultrasonography (USG). Abdomen USG detected a cystic pelvic mass in left ovary. Magnetic resonance imaging showed 60 mm × 45 mm cystic mass in left ovary. Radioiodine uptake (10 µCi) and thyroid scintigraphy with 185 MBq (5 mCi) Tc-99m was also normal. A whole-body scan was performed 48 h after oral ingestion of 29.6 MBq (0.8 mCi) iodine-131 (I-131) capsule revealed a round structure located to the left lower abdomen. Iodine uptake was detected in this cyst that was compatible with functional thyroid tissue demonstrated by single-photon emission computerized tomography/computerized tomography (SPECT/CT) [Figure 1]. Left salpingo-oophorectomy was done with frozen section. Histopathology confirmed mature cystic teratoma that was containing thyroid follicles [Figure 2]. The euthyroid state was achieved. Struma ovarii is rare and usually benign ovarian teratoma, which consist of

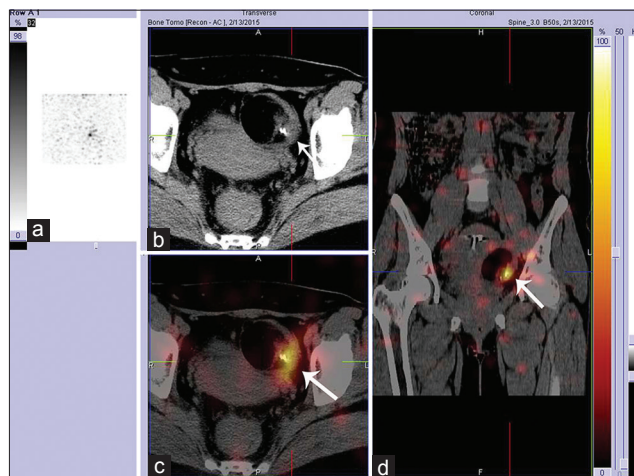


Figure 1: A whole-body scan was performed 48 h after oral ingestion of 29.6 MBq (0.8 mCi) I-131 sodium iodide capsule revealed a focal uptake. (a) Planar image shows focal iodine uptake located to the left lower abdomen. In single-photon emission computerized tomography/computerized tomography images this focal uptake was corresponding to the solid components of the large cyst which is containing calcification (arrow). (b) Low dose unenhanced computerized tomography without intravenous contrast images. (c) Axial fusion single-photon emission computerized tomography/computerized tomography images. (d) Coronal fusion single-photon emission computerized tomography/computerized tomography images

Address for correspondence:

Dr. Yusuf Demir,
Department of Nuclear Medicine, School of Medicine, Yüzüncü Yıl University, Zeve Campus, Van, Turkey.
E-mail: dryusufdemir@gmail.com

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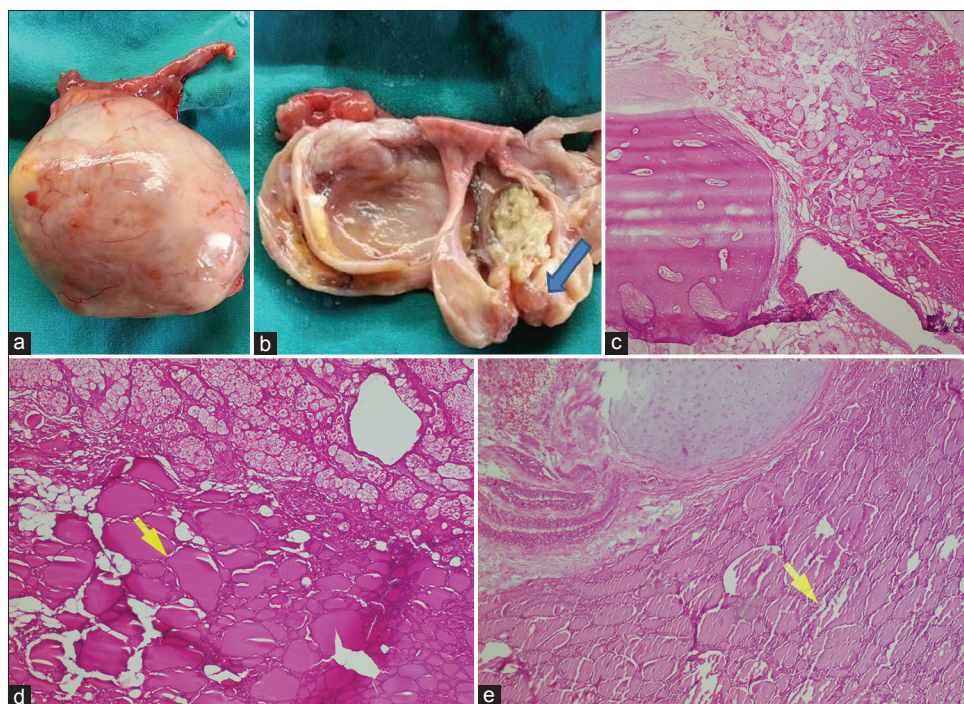


Figure 2: (a) Mature cystic teratoma of ovary. (b) Macroscopic photo of an opened ovarian cyst with hairs and greasy sebaceous material. This teratoma contains thyroid tissue (blue arrow). (c) Microscopic photo showing bone, thyroid tissue, a cystic spaces lined with smooth membrane and mucous glands (H and E, ×40). (d) Microscopic photo showing benign thyroid tissue and sebaceous glands in cystic wall of a benign multiloculated ovarian mature cystic teratoma cyst (H and E, ×100). (e) Microscopic photo showing benign thyroid tissue and cartilage in cystic wall of lesion (H and E, ×100)

thyroid tissue in the ovarian mass. Most of these tumors are associated with hyperthyroid disease in 5–20%.^[1] Clinical features may resemble ovarian malignancy and rarely can be metastatic.^[2-5] Typically presents as a multicystic mass with lobulated surface and thickened septic or cyst walls with some solid components. High attenuation areas and calcifications in the solid components are common findings on CT images.^[6] Scintigraphy with Tc-99m pertechnetate, I-123, and I-131 was used for diagnosing a hyperfunctioning struma ovarii on the basis of higher uptake of the radionuclide with planar images.^[2-5] If the clinicians or nuclear medicine physician does not consider the extrathyroidal tissue as a result of hyperthyroidism patient's diagnosis cannot be made by the other nuclear medicine test such as I-131 uptake and thyroid scintigraphy. So, the extrathyroidal cause of hyperthyroidism can lead to the dilemma in nuclear medicine. In our patient, an I-131-thyroid uptake was in normal ranges, and a Tc-pertechnetate scan of the thyroid showed normal distribution. I-131 whole-body scan identified the cause of hyperthyroidism. Further, SPECT/CT localized the thyroid tissue in large pelvic mass accurately.

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Conflicts of interest

There are no conflicts of interest.

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