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Exceptionally Rare Isolated Thyroidal Metastasis of Pulmonary Carcinosarcoma: A Tale of ^{18}F-FDG-positive Thyroid Nodule

Pulmoner Karsinosarkomun Son Derece Nadir İzole Tiroid Metastazı: Bir ^{18}F-FDG Pozitif Tiroid Nodülü Öyküsü

Mehmet Emin Mavi[1], Fariba Amini[2], Seyfettin Ilgan[3]

[1]*Karaman Training and Research Hospital, Clinic of Nuclear Medicine, Karaman, Türkiye*
[2]*Güven Hospital, Clinic of Pathology, Ankara, Türkiye*
[3]*Güven Hospital, Clinic of Nuclear Medicine, Ankara, Türkiye*

Abstract

Pulmonary carcinosarcomas (PCS) are uncommon and aggressive malignant tumors with epithelial and mesenchymal components and have a worse prognosis than other non-small-cell lung cancers. Metastases of non-thyroidal malignancies to the thyroid are rare. We reported a unique case of isolated thyroidal metastasis of PCS and discussed ^{18}F-fluorodeoxyglucose (^{18}F-FDG) positivity in incidentally found thyroid nodules on ^{18}F-FDG positron emission tomography scan.

Keywords: ^{18}F-fluorodeoxyglucose, thyroid, lung, PET/CT, incidental, ultrasonography

Öz

Pulmoner karsinosarkomlar (PCS), epitelyal ve mezenkimal bileşenleri olan ve diğer küçük hücreli dışı akciğer kanserlerinden daha kötü prognoza sahip, nadir görülen ve agresif malign tümörlerdir. Tiroid dışı malignitelerin tiroid metastazları nadirdir. PCS'nin oldukça benzersiz bir izole tiroid metastazı olgusunu bildirdik ve ^{18}F-florodeoksiglikoz (^{18}F-FDG) pozitron emisyon tomografi taramasında tesadüfen bulunan tiroid nodüllerindeki ^{18}F-FDG pozitifliğini tartıştık.

Anahtar kelimeler: ^{18}F-florodeoksiglikoz, tiroid, akciğer, PET/BT, insidental, ultrasonografi

Address for Correspondence: Mehmet Emin Mavi MD, Karaman Training and Research Hospital, Clinic of Nuclear Medicine, Karaman, Türkiye
Phone: +90 543 960 85 80 **E-mail:** mehmeteminmavii@gmail.com ORCID ID: orcid.org/0000-0001-7702-8157
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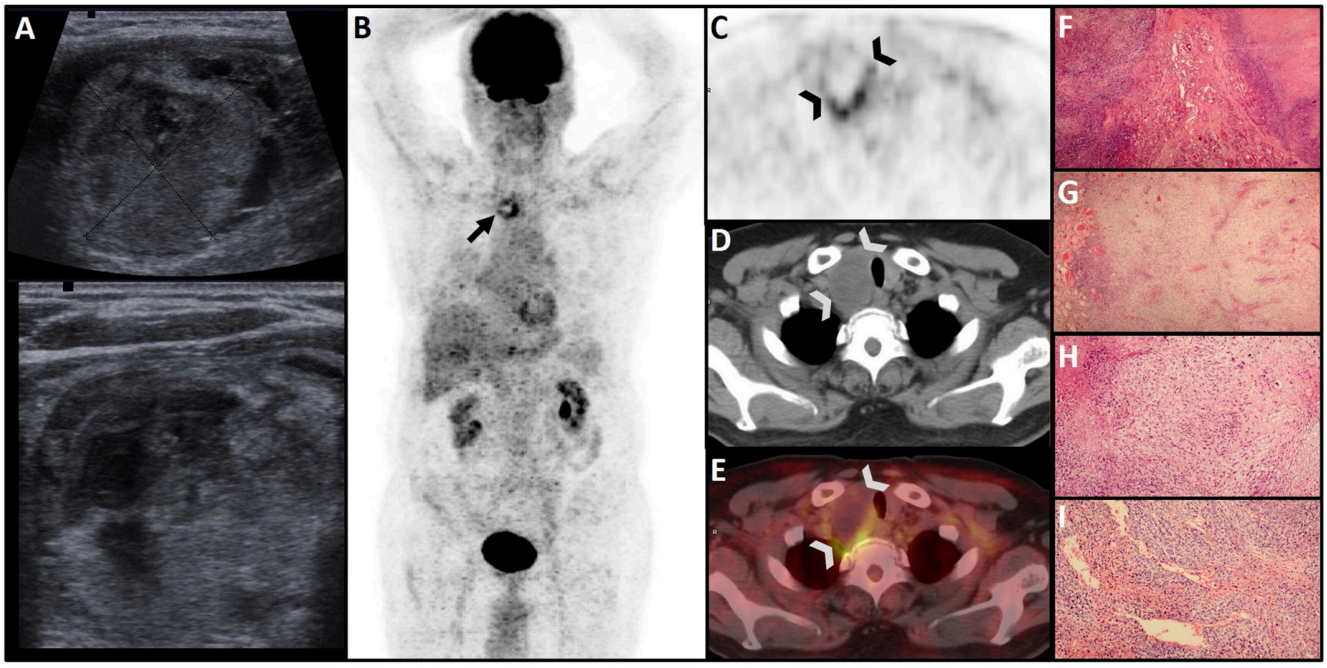

Figure 1. An 81-year-old man underwent right lower lobectomy because of a growing solitary pulmonary mass, and the final histopathology was reported as pulmonary carcinosarcomas (PCS). ^{18}F-fluorodeoxyglucose (^{18}F-FDG) positron emission tomography (PET) scan for primary staging revealed a large thyroid nodule with heterogeneous peripheral ^{18}F-FDG uptake in the right lobe without any sign of regional or distant metastasis in other body parts. Ultrasonography (USG) examination revealed a 44×35 mm, parallel oriented, isoechoic, predominantly solid nodule with scattered cystic areas (A). Although the nodule was deemed to be at low risk of primary thyroid cancer, fine needle aspiration biopsy (FNAB) was performed to exclude malignancy. The cytological samples were hypocellular and mostly comprised cystic components without any sign of atypia, supporting USG findings. Follow-up is recommended instead of repeat biopsy because of age and co-morbidity. One year later, the patient presented with hoarseness and difficulty in swallowing. Follow-up PET scan showed peripheral ^{18}F-FDG uptake [maximum standardized uptake value (SUV_{max}): 4.6] in the thyroid nodule, similar to the previous scan [arrow in (B) maximum intensity projection images and arrowheads in (C) axial PET, (D) CT, and (E) fusion images]. Repeated USG examination showed almost identical USG findings as the previous exam but considerable increase in size (58x38 mm). Thyroid lobectomy was recommended to alleviate local compression symptoms. Direct invasion of the mass into the esophagus and perithyroidal soft tissues discovered during surgery unexpectedly. The final histopathology of the thyroid nodule was concordant with PCS metastasis [(F, G) H&E staining at x4 magnification showing replacement of the normal thyroid parenchyma by malignant cells observed in the lung, (H) heterologous mesenchymal component (chondrosarcoma), (I) diffuse lymphovascular invasion].

PCS, comprising epithelial and mesenchymal components, represents 0.2% of primary lung cancers and has a worse prognosis than other non-small-cell lung cancers (1). Metastases of non-thyroidal malignancies to the thyroid are quite rare (2). There are only a few reports on PCS metastasis (3,4), but to the best of our knowledge, this is the first reported case of thyroidal PCS metastasis.

Incidental ^{18}F-FDG-positive thyroid nodules (IFTNs) are commonly encountered in patients undergoing ^{18}F-FDG PET for non-thyroidal illnesses. It has been demonstrated that the malignancy risk of IFTNs in the low-risk USG category did not show an increase compared with the general population (5). Conversely, IFTNs in the intermediate-high suspicion USG categories showed an increase in malignancy compared with the general population (5). A meta-analysis concluded that there is often considerable overlap in SUV_{max} values between benign and malignant thyroid nodules. Therefore, no SUV_{max} cut-off can be considered safe for benign-malignant differentiation (6). The American Thyroid Association guidelines recommend USG-guided FNAB for thyroid nodules >1 cm with focal ^{18}F-FDG uptake (7). However, this approach potentially may lead to unnecessary FNAB in the majority of patients because two out of three IFTNs will eventually be benign, and tailored decision-making strategies are recommended, considering the USG risk group of nodule and stage of non-thyroidal comorbid illness instead of directly pursuing a potentially co-existent low-risk thyroid carcinoma (8,9). On the other hand, as in the present case, IFTNs in patients with underlying non-thyroidal malignancy and metastasis to the thyroid gland should always be considered. ^{18}F-FDG- positive nodules with low USG risk factors may be of great importance in the clinical context.

Ethics

Informed Consent: Since the information provided is anonymous, obtaining informed consent from the patients was deemed not required.

Authorship Contributions

Analysis or Interpretation: M.E.M., F.A., S.I., Literature Search: M.E.M., F.A., S.I., Writing: M.E.M., F.A., S.I.

Conflict of Interest: No conflicts of interest were declared by the authors.

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