Thyroid Under Siege: A Rare Manifestation of Breast Cancer Metastasis

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Abstract

Breast cancer is the most frequently diagnosed cancer in women all over the world and commonly metastasizes to lymph nodes, bones, lungs liver and brain. There is a slight increase in incidence of second primary malignancy in thyroid gland of patients with breast cancer. However, thyroid gland is a rare site of breast cancer metastatic spread. We present a rare case of breast carcinoma with incidental uptake on F18-FDG PET-CT which was histologically confirmed to be metastatic breast carcinoma to thyroid gland.

Keywords: Breast cancer, thyroid gland metastasis, F-18 FDG PET-CT.
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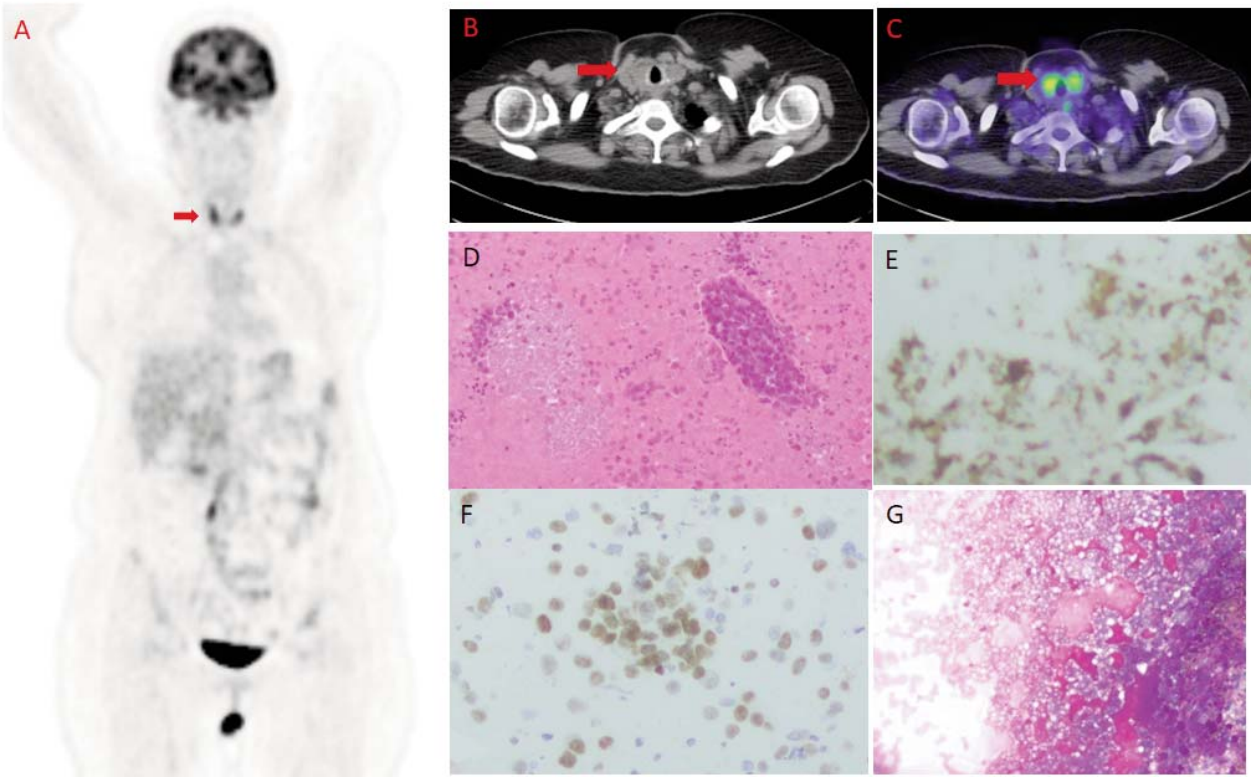

Figure: A shows coronal image of PET-CT with increased uptake in bilateral thyroid lobes - red arrow. No other suspicious FDG accumulation is noted elsewhere. Figure B and C show axial CT and Fused PET-CT slices respectively indicating enlarged heterogenous thyroid gland with corresponding increased FDG uptake - red arrow. Figure D to G are cytopathology slides of thyroid tissue which show high nuclear to cytoplasmic ratio and nuclear atypia. It is positive for CK 7 and GATA3 and negative for TTF1.

Case Discussion

A 47-year-old female was diagnosed with adenocarcinoma of right breast in 2023. Due to metastatic disease in axillary, cervical and mediastinal lymph nodes, she was advised palliative chemotherapy. During the course of treatment, she developed multinodular goiter with FDG uptake on response assessment PET-CT scan in thyroid nodules as shown in Figure (A to C). Fine needle aspiration cytology of thyroid nodule was carried out which confirmed metastatic breast carcinoma to thyroid gland shown by figure D to G.

Incidental thyroid nodules are seen in 1.2 – 2.3% of patients undergoing FDG PET-CT for various malignancies including breast cancer.[1] Review of literature suggests about 30-45 percent of these FDG avid thyroid nodules can turn out to be malignant.[2] According to 2015 American Thyroid Association guidelines, avid thyroid nodules should undergo fine needle aspiration cytology to rule out malignancy.[3] Apart from primary malignant neoplasms of the thyroid, there are some malignancies which, although rare, can show metastatic spread to the thyroid gland e.g. breast, colon, renal cell carcinoma and melanoma.[4] Although the incidence of thyroid metastasis in breast cancer is rare approximately 7.8%,[5] its possibility should be considered whenever FDG avidity is encountered in thyroid nodules in cases of breast cancer

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