Low-Grade Thymoma with Osseous and Pulmonary Metastases: Role of ^{18}F-Fluorodeoxyglucose Positron Emission Tomography–Computed Tomography in Initial Staging

Abstract

Thymomas are rare anterior mediastinal tumors that originate in the epithelial cells of the thymus and have a rare propensity to metastasize to extrathoracic locations unless it is a histologic high-grade neoplasm (type B and above). We describe a case of 50-year-old woman diagnosed with type AB thymoma and the role of ^{18}F-fluorodeoxyglucose positron emission tomography–computed tomography in accurate delineation of extrathoracic metastases during initial staging.

Keywords: *Metastases, osseous, positron emission tomography–computed tomography, pulmonary, thymoma*

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A 50-year-old woman with chief complaints of cough and dyspnea for 6 months underwent contrast-enhanced computed tomography (CT) chest which revealed a large anterior mediastinal mass with no evidence of mediastinal vessels invasion. Biopsy from the mass showed AB-type thymoma with tumor cells immunopositive for pan-cytokeratin and TdT while negative for calcitonin. Then, the patient was subjected to ^{18}F-fluorodeoxyglucose positron emission tomography–CT (^{18}F FDG PET-CT) scan [Figure 1] to rule out any distant metastases. PET-CT scan findings revealed heterogeneous area of FDG uptake in the thoracic region and two discrete foci of radiotracer uptake in the right proximal thigh region [Figure 1a]. Fused coronal PET-CT image showed heterogeneous FDG uptake in the anterior mediastinal mass that measured ~7.6 transverse (TR) cm × 5.6 Antero-posterior (AP) cm × 10 cranio-caudal (CC) cm [Figure 1b]. Few FDG avid nodules in the bilateral lung fields were seen in fused axial PET-CT images [Figure 1c and d, nodule in the left lung lower lobe by solid white arrow and nodule in the right lung lower lobe by solid white arrow, respectively]. Also seen were focal areas of increased FDG uptake in the right pelvic region (solid black arrows) on maximum intensity projection image which were localized to lytic lesions in the lower lip of right acetabulum and right ischium on fused transaxial ^{18}F FDG PET-CT images [Figure 1e, solid white arrow].

Thymomas are rare epithelial neoplasms (0.2%–1.5% of all malignancies) and mostly occur in the anterosuperior mediastinum. They are classified on histologic basis as types A, AB, B1, B2, B3, and C (thymic carcinoma).[1] Most of the thymomas invading the neighboring organs or presenting with distant metastasis are of histologic types B and C.[2-4] The most common extrathoracic metastatic site of thymomas remain lung followed by liver, lymph nodes, and bones.[5-7] ^{18}F FDG PET-CT can be helpful in predicting the histology and evaluating the exact extent of the disease for the initial staging of tumor.[8] Although the incidence of metastases is seen higher in cases of thymic carcinomas and thymic neuroendocrine carcinomas, this case shows that, although uncommon, low-grade thymomas can also manifest with extrathoracic metastases. The authors advocate the routine use of ^{18}F FDG PET-CT high-grade as well as low-grade thymic epithelial neoplasms for initial staging purposes and accurately rule out distant metastases if any before proper therapeutic interventions are commenced.

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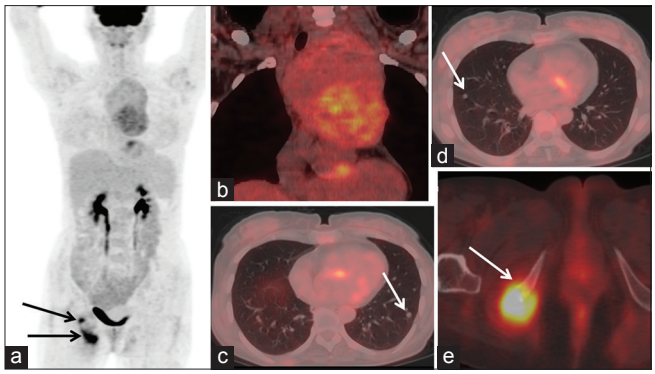

Figure 1: (a) Maximum intensity projection image of fluorodeoxyglucose positron emission tomography–computed tomography showing heterogeneous area of fluorodeoxyglucose uptake in the thorax and two other discrete foci of fluorodeoxyglucose uptake in the right proximal thigh region (solid black arrows). (b) Fused coronal positron emission tomography–computed tomography image showing enlarged anterior mediastinal mass with heterogeneous fluorodeoxyglucose uptake. (c and d) Fused axial positron emission tomography–computed tomography image showing two discrete nodules in both the lungs (solid white arrows). (e) Fused axial positron emission tomography–computed tomography image showing fluorodeoxyglucose avid lytic lesions in the right ischium (solid white arrow)

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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