18F FDG-PET/CT of malignant thymoma with pleural and diaphragmatic metastases

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Sir,

Thymoma is the most common primary neoplasm of the anterior mediastinum but it accounts for <1% of all adult malignancies.[1] Thymomas are common in patients above 40 years of age, are rare in children, and affect men and women equally. Distant metastasis from invasive thymoma is distinctly rare but has been reported to occur in the lungs, pleura, diaphragm, liver, bones, kidney, extra thoracic lymph nodes, pelvis, retroperitoneum, and the nervous system.[2,3] Imaging plays an essential role in the diagnosis, staging, and follow-up of thymoma. Positron emission tomography (PET) has an invaluable role in confirming the diagnosis of an invasive malignant thymoma. Although computed tomography (CT) revealed the evidence of an anterior mediastinal mass, PET showed a hypermetabolic mass, thereby raising suspicion of malignancy. We here report a case of thymoma in a 55-year-old male with pleural and diaphragmatic metastasis detected on 18F fluorodeoxyglucose (FDG)/PET contrast enhanced CT scan.

A 55-year-old male presented with episodic right-sided subcostal chest pain, breathlessness, and cough for 3 months. The physical examination was unremarkable. Complete blood counts and results of the liver and renal function tests were within normal limits. Chest roentgenogram showed a large soft tissue mass adjacent to the right bronchus. Contrast-enhanced computed tomography (CECT) revealed an intermediate-to-low-density lobulated mass in the anterior mediastinum, along with a pleural-based solid lesion and a diaphragmatic mass. 18F FDG/PET/CT scan revealed a lobulated enhancing soft tissue density lesion measuring 10 × 5.7 × 3.7 cm in the anterior mediastinum extending retrosternally (Figure 1d), along with the hypermetabolic soft tissue hypodense area measuring 3.8 × 1.8 cm along the diaphragmatic surface abutting the adjacent right lobe of the liver, suggesting pleural deposit (Figure 1f). There was another FDG avid soft tissue hypodense deposit of 2.2 × 1.1 cm under the right crus of the diaphragm at the level of the kidney (Figure 1e). Biopsy from the anterior mediastinal mass showed fibrocollagenous tissue infiltrated by a tumor composed of sheets of neoplastic epithelial cells admixed with mature T lymphocytes (Figure 1a). The tumor also demonstrated signs of microinvasion of the capsule. The findings were consistent with malignant (invasive) thymoma of a mixed (lymphoepithelial) variety. The patient underwent preoperative chemotherapy and 18F FDG-PET/CT was repeated after three cycles of chemotherapy showed shrinkage and decreased FDG uptake of the anterior mediastinal mass (Figure 1g), pleural metastasis (Figure 1i), and complete resolution of diaphragmatic deposit (Figure 1h). MIP images of pre and post chemotherapy have been shown in Figure 1b and 1c respectively.
Thymic epithelial tumors are broadly classified into thymoma and thymic carcinoma. The prognosis of the patients principally depends on histological classification of clinical staging of the disease. The pattern of relapse of resected thymomas includes regional or local recurrence or distant metastases. In this, imaging plays a crucial role in the diagnosis, staging, and follow-up of patients. Pleural reoccurrence occurs in less than 10% of resected thymomas. Pleural involvement may concern single or multiple implants and may involve the diaphragm.[4] 18F FDG-PET/CT is a useful imaging modality to evaluate tumor activity, glucose metabolism, and whole body morphology in a single session. It can help in predicting the histology and evaluating the exact extent of the disease for the initial staging of tumor.[5] It is also helpful for the follow-up of patients who have undergone treatment.

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Conflicts of interest
There are no conflicts of interest.

REFERENCES

Figures and Tables

Figure 1
Biopsy from anterior mediastinal mass showed sheets of neoplastic epithelial cells admixed with mature T lymphocytes (a). Prechemotherapy maximum intensity projection (MIP) image of PET/CT (b) showing primary lesion and diaphragmatic and pleural metastases (d, e, and f, respectively). Postchemotherapy MIP image of PET/CT (c) showing significant response and complete resolution of diaphragmatic metastasis (h) and metabolic resolution of primary (g) as well as pleural metastasis (i)