



Foci of FDG-Avid Nodules in the Thorax Masquerading Tumour Metastasis in Patient with Recurrent Malignant Paraganglioma (PGL)

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Clinical Image

A 17-yr-old man who was diagnosed with par aortic PGL presented with symptoms related to raised serum catecholamine after episodes of tumour recurrences 3 years prior for which patient was treated with surgery. He underwent PET/CT (Biograph Sensation 64, Siemens Medical Systems, Germany) for tumour restaging 1 hr after injection of 10 mCi, Fluorine-18, flurodeoxyglucose (¹⁸F-FDG). ¹⁸F-FDG PET/CT demonstrated multiple FDG-avid lesions in the left lung, along the posterior parietal pleural in the left lower hemi thorax, and in the left anterior chest wall (Figure1). Interestingly, all the FDG-avid nodules except a nodule in the lower lobe of the left lung are false positive lesions as evaluated on the correlated CT images (Hounsfield unit: -10) (Figure 2,3). The false FDG-positive lesions are in keeping with FDG-avid brown fat uptake. This patient was referred for further management of metastatic malignant PGL in the lung.

Diagnosis and Discussion

We document multiple foci of FDG brown fat uptake in rare isolation of the anterior chest wall and parietal pleural which may masquerade malignancy on ¹⁸F-FDG PET/CT. The diagnosis was made on the basis of their fat density nature on the correlated CT averting the treatment intent for diffuse chest wall metastatic disease. The patient was treated for metastatic PGL recurrence in the lung.

Oncologic PET is typically performed with the radiopharmaceutical 18F-FDG (Fluorine -18, flurodeoxyglucose, a glucose analog which form a favoured substance used to signal the in-vivo mechanism of increased glucose metabolism by malignant cells. Nevertheless, physiological FDG uptake in adipose tissue, muscle, and myocardium are also important tenet in cancer imaging particularly in patient with increased sympathetic activity i.e. paraganglioma [1].

Our finding of hyper metabolic brown fat in the mediastinum occurring in mediastinum may pose confusion to inexperience PET-CT reader given their rare pattern and encounter in this

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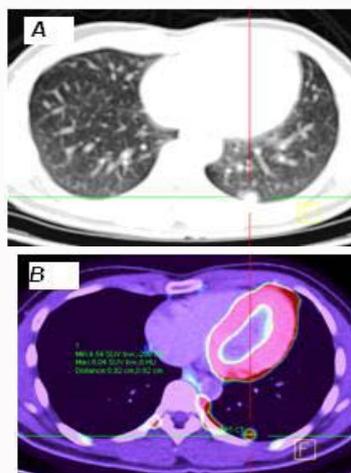


Figure 1: Axial CT (Figure 1a) and fused FDG PET-CT in the left (Figure 1b) images of the case described. Hairline marker indicate hypermetabolic metastatic paraganglioma nodule in the lower lobe of the left lung (SUVmax: 8.04).

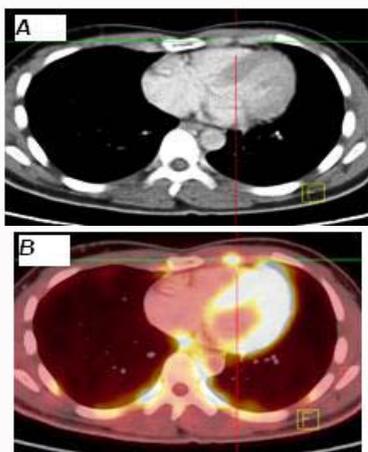


Figure 2: Axial CT (Figure 1a) and fused FDG PET-CT in the left (Figure 1b) images of the case described. Hairline markers indicate focus of FDG-avid brown fat uptake in the left anterior chest wall without perceptible abnormality on CT.

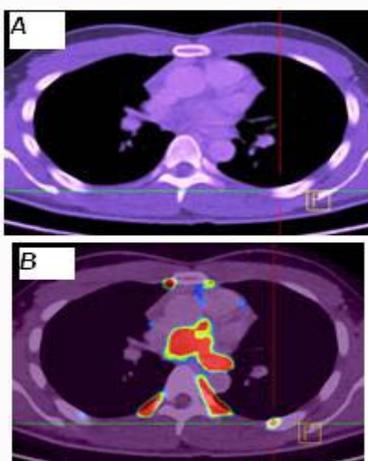


Figure 3: Axial CT (Figure 1a) and fused FDG PET-CT in the left (Figure 1b) images of the case described. Hairline markers demonstrate another focal FDG-avid configuration along the parietal pleura of the left lower hemithorax without discernible abnormality on CT favouring a brown fat signal.

region [2]. The usual pattern of brown adipose tissue is seen along the spinal cord as a par vertebral depot, in the mediastinum, particularly in the para-aortic area, around the heart, particularly the apex and infradiaphragmatic depots, particularly in the per renal area [3-5]. Knowledge of this potential pitfall of FDG PET/CT is essential to avoid mistaking it for progression of chest wall metastases in the thorax thus help improve the diagnostic interpretation and disease staging.

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