All That Lights-Up is not Lymphoma

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Dear Editor,

Fluoro-2deoxy-D-glucose (¹⁸F-FDG) Positron Emission Tomography Computed Tomography-(PET-CT) imaging is widely used in staging and follow up of patients with lymphoma [1]. FDG uptake can be seen not only in malignant condition but also in benign conditions like thymic hyperplasia, tuberculosis, sarcoidosis, radiation pneumonitis, active infection and so on [2]. The challenge for the treating physician is to recognize these entities and avoid many pitfalls associated with positive PET-CT imaging. We hereby present 2 patients of lymphoma who had an alternative etiology identified for FDG avidity in PET CT.

Case 1

A 69 year old male was diagnosed with follicular lymphoma stage IV. He received 6 cycles of Bendamustine and Rituximab chemotherapy following which patient was in complete metabolic response and on maintenance Rituximab therapy. On routine follow up FDG PET CT scan 2 years after completion of therapy, demonstrated FDG

avid (SUV max-6.5) and non-avid lymph nodes in the pre-tracheal, para-vertebral, sub-carinal, prevascular, aorto-pulmonary window, bilateral hilar and bilateral tracheo-bronchial region, largest measuring 1.6 × 1.2 cm in the right tracheobronchial region. He underwent transbronchial needle aspiration (TBNA) of the tracheobronchial lymph node to rule out recurrence of disease. Cytology demonstrated bronchial epithelial cell, anthracotic pigment and lymphocytes against hemorrhagic backgrounds suggestive of anthracosis. Retrospectively, patient gave a significant history of smoking. He continues to be in remission at a follow up of 4 year after the TBNA cytology.

Case 2

A 78 year old male, a smoker was diagnosed as classical Hodgkin lymphoma received 2 cycle of ABVD. PET CT scan done for response evaluation after 2 cycles of ABVD demonstrated decrease in size, number and FDG avidity of lymph nodes except mediastinal lymph node which demonstrated increase in size and FDG avidity (SUV max 4.5). It is unusual for lymphoma to regress at all sites and progress at one site. To rule out disease progression, TBNA was performed. Cytology demonstrated black pigment laden macrophages, bronchial epithelial cell and inflammatory cell suggestive of anthracosis (Fig. 1). Retrospectively after questioning he gave history of smoking and exposure to passive smoke as many of his colleague were chain smoker.

Anthracosis is a milder form of pneumoconiosis resulting from accumulation of black carbon containing pigment in the airway or lung. It commonly occurs in urban dwellers residing in heavily polluted region, tobacco smokers and coal workers [3]. Anthracotic

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Fig. 1 Smear demonstrates anthracotic pigment, occasional bronchial epithelia; cells and lymphocytes against hemorrhagic background

lymphadenopathy causing false positive FDG avidity has been reported in lung cancers and in cancer of head and neck in PET CT [4]. A recent meta-analysis has identified a high (37%) false positivity in symptomatic patients with non-Hodgkin lymphoma who have earlier attained remission at the end of therapy [5].

Any new FDG avid lesion on PET CT or progression in patients with lymphoma needs to be confirmed with biopsy, especially in a scenario where the lesion changes

management as in our first case or not corroborating clinically as in our second case.

False positive PET CT may result in unnecessary treatment escalation, financial loss, toxicity related to therapy and emotional trauma to patient. Knowledge about causes of false positive and false negative PET CT helps to clinicians in making right decisions regarding management and improved overall outcome.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

References

1. El-Galaly TC, Villa D, Gormsen LC, Baeck J, Lo A, Cheah CY (2018) FDG-PET/CT in the management of lymphomas: current status and future directions. *J Intern Med* 284:358–376
2. Long NM, Smith CS (2011) Causes and imaging features of false positives and false negatives on 18F-PET/CT in oncologic imaging. *Insights Imaging* 2:679–698
3. Shah A, Kunal S, Gothi R (2018) Bronchial anthracofibrosis: the spectrum of radiological appearances. *Indian J Radiol Imaging* 28(3):333–341
4. Lee J, Kim YK, Seo YY, Choi EK, Lee DS, Kim YS et al (2018) Clinical characteristics of false-positive lymph node on chest CT or PET-CT confirmed by endobronchial ultrasound-guided trans-bronchial needle aspiration in lung cancer. *Tuberc Respir Dis (Seoul)* 81(4):339–346
5. Adams HJA, Kwee TC (2019) Proportion of false-positive follow-up FDG-PET scans in lymphoma: systematic review and meta-analysis. *Crit Rev Oncol Hematol* 141:73–81

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