

PET artefact masquerading as a PET positive lung mass

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DESCRIPTION

A 70-year-old man was referred for evaluation of multiple lung nodules. His medical history was significant for stage IV non-Hodgkin's lymphoma in remission for the past 10 years. Physical examination and laboratory tests were unremarkable. Positron emission tomography and CT (PET-CT) of the chest demonstrated non-hypermetabolic scattered pulmonary nodules measuring up to 1.0 cm in diameter and an intense fluorodeoxyglucose (FDG)-avid hypermetabolic lesion adjacent to the right hilum extending to the medial segment of the right lower lung (RLL), without any corresponding

abnormality on the chest CT (figures 1–3). This lesion had standardised uptake values of 55 on the transaxial plane. Bronchoscopic examination of the RLL showed patent airways without any endobronchial lesion. Cultures, smear and cytology from bronchoalveolar lavage of the RLL were non-diagnostic. The abnormal FDG-avid hypermetabolic lesion in the RLL disappeared on follow-up PET-CT (figure 4).

We illustrate an unusual artefact that is explained by the formation of an FDG-containing blood clot during or after injection,¹ which leads to microembolism in the pulmonary capillaries extending to the peripheral portion of the lung. Sometimes, this is more frequent if the injector withdraws blood to confirm intravenous patency resulting in blood combining with FDG in the syringe, which is then re-injected. This phenomenon does not result in any clinical symptoms and its true incidence is not known.² A late time point image can be useful as the abnormality can disappear after an hour, confirming the artefact.

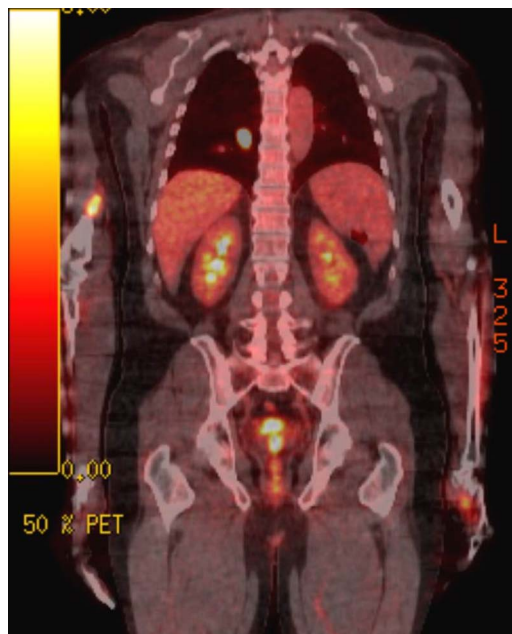


Figure 1 Coronal plane of the positron emission tomography-CT scan demonstrates fluorodeoxyglucose-avid hypermetabolic lesion adjacent to the right hilum.



Figure 3 Transaxial plane of the co-registered CT of the chest does not show any corresponding abnormality in the area of the positron emission tomography-positive lesion.

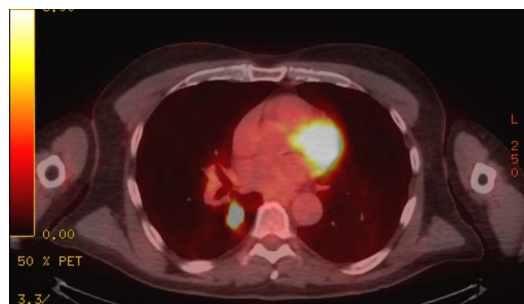


Figure 2 Transaxial plane of the positron emission tomography-CT scan demonstrates fluorodeoxyglucose-avid hypermetabolic lesion adjacent to the right hilum.

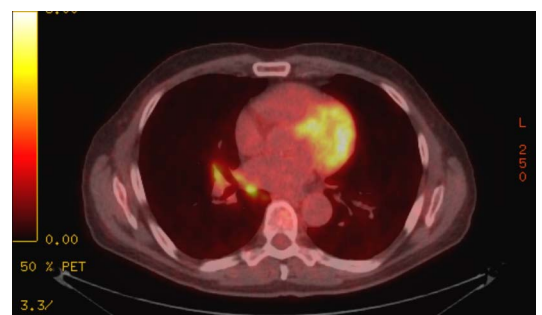


Figure 4 The fluorodeoxyglucose-avid hypermetabolic lesion adjacent to the right hilum has disappeared without any intervention on repeat positron emission tomography-CT.



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Learning points

- ▶ When interpreting intrapulmonary fluorodeoxyglucose-avid hypermetabolic lesions, anatomical correlation with co-registered CT image must be performed to avoid misdiagnosis or overstaging of malignancy.
- ▶ When no abnormality is seen on the chest CT in the area of the positron emission tomography-positive lesion, artefacts such as blood clot injection artefact should be suspected.

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Competing interests None declared.

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