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FDG PET/CT study was performed for staging of primary left breast tumor. CT was done with intravenous contrast (image A) followed by acquisition of PET images. Axial upper chest images (fused PET/CT and PET; B and C) show linear shaped metabolic activity in right axilla with SUVmax 2.0. This was not appreciable in non-attenuation corrected PET image (D). How do you explain this scan presentation?

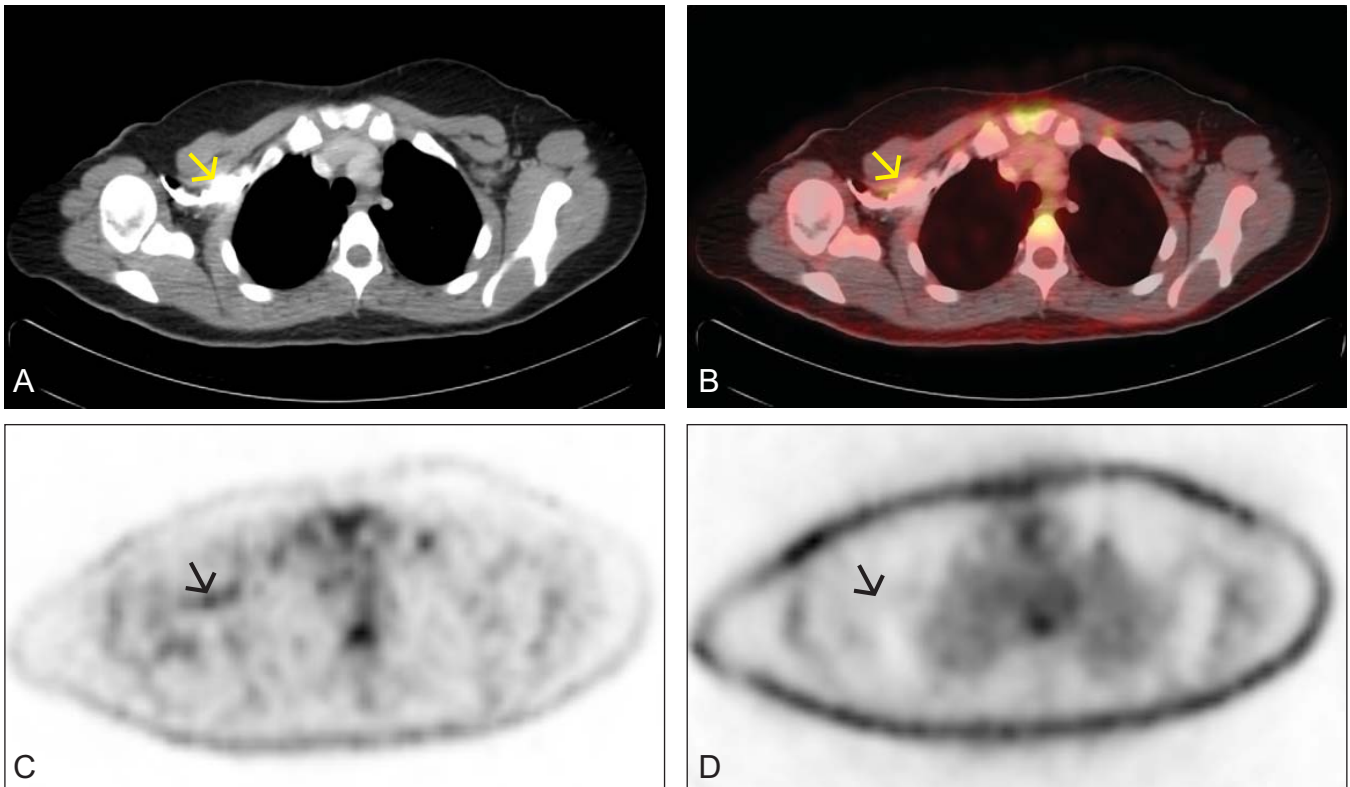


Figure A: CT axial view with intravenous contrast marked with arrow. **B:** Fused PET and CT axial image showing FDG avidity over right axilla (SUVmax 2.0 - marked by arrow). **C:** PET (attenuation corrected image; AC) showing linear shaped FDG uptake in right axilla (arrow). **D:** PET (Non-attenuation corrected image; NAC) not showing linear shaped FDG uptake in axilla as noted in AC-PET image (arrow).

QUIZ

Answers

Linear shaped metabolic activity in right axilla is a false positive finding caused by presence of intravenous contrast in right axilla. Since CT images are used for attenuation correction of PET images as a mandatory step and presence of high density object (intravenous contrast) on CT images over-corrects same area on PET image and creates linear shaped FDG avidity in right axilla. However, non-attenuation corrected (NAC) PET image shows no such activity (false positive metabolic activity). Therefore, review of NAC images at the time of reporting FDG PET/CT is important to identify false positive metabolic activity caused by presence of high density object(s) (like oral or intravenous contrast or metallic implant) on CT images. This is one of the reasons why intravenous contrast is not encouraged in FDG PET/CT imaging.

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