

Gossypiboma of Axilla: Imaging Pitfalls on Fluorodeoxyglucose Positron Emission Tomography and Computed Tomography

Abstract

¹⁸F-fluorodeoxyglucose (FDG) positron emission tomography (PET) with computed tomography (CT) has become the standard of care in staging, restaging, and response assessment of various malignancies including malignant melanoma. However, nonspecific uptake of FDG can occur in infectious and inflammatory conditions and can mimic a tumor. We present here a case of gossypiboma of the axillary region with FDG uptake detected in a patient with malignant melanoma of the upper extremity and discuss the potential pitfalls of this entity on FDG-PET/CT.

Keywords: *¹⁸F-fluorodeoxyglucose positron emission tomography, gossypiboma, melanoma*

**Manohar Kuruva,
Kedar Jambhekar,
Sanjaya Viswamitra,
Roopa Ram**

*Department of Radiology,
University of Arkansas for
Medical Sciences, Little Rock,
Arkansas, USA*

Introduction

¹⁸F-fluorodeoxyglucose (FDG) positron emission tomography/computed tomography (PET/CT) is one of the most commonly used diagnostic modalities for staging and restaging patients with various malignancies. However, due to its nonspecific nature, FDG uptake can also be seen in nonmalignant conditions such as inflammatory/infectious processes. Certain imaging clues can help in the accurate diagnosis of such nonmalignant causes and avoid pitfalls. We describe a case of gossypiboma of the axilla and highlight the importance of history and correlation with prior imaging in making the diagnosis.

Case Report

A 57-year-old male patient was diagnosed with malignant melanoma of the right upper arm and treated with wide local excision and sentinel lymph node biopsy. PET/CT performed at the time of surgery did not reveal lymph nodal [Figure 1a] or distant metastatic disease (not shown). Sentinel lymph node biopsy was also negative for metastasis. During the postoperative period, the patient developed wound infection in the right axilla which was successfully treated with debridement and antibiotics. Follow-up FDG-PET/CT scan done after 5 months revealed a new 4.1-cm right axillary mass with moderate FDG uptake ($SUV_{max} = 4.4$). Multiple linear radiopaque foci in the

surgical bed which were presumed to be surgical clips were seen within the central portion of the mass [Figure 1b]. Due to negative sentinel node biopsy at the time of surgery as well as prior history of postoperative wound infection, the increased FDG uptake was attributed to postoperative granulation tissue and less likely due to the development of metastatic disease and a short-interval follow-up examination was suggested. Follow-up scans performed after 2 months did not show significant interval change. As the patient continued to remain asymptomatic and the lesion showed stability over consecutive scans, no intervention was performed and the biopsy was deferred. The patient was then lost to follow-up.

However, 2 years following the initial surgery, the patient returned with discomfort in the axilla and repeat PET/CT was performed. On repeat FDG-PET/CT, the lesion showed minimal increase in size to 4.6 cm and intense FDG activity with SUV_{max} of 14.4 [Figure 1c]. On careful review of the images from the CT portion of the PET/CT, suspicion of retained surgical sponge was raised [Figure 1d]. X-rays obtained for confirmation revealed a foreign body with wavy radiopaque hyperdense borders in the right axilla [Figure 1e-arrow], consistent with the retained surgical sponge. The diagnosis of gossypiboma was strongly considered and surgical resection was performed. Surgical

Address for correspondence:

*Dr. Manohar Kuruva,
Department of Radiology and
Nuclear Medicine, University of
Arkansas for Medical Sciences,
4301 West Markham Street,
Little Rock, Arkansas 72205,
USA.*

E-mail: manokmc@gmail.com

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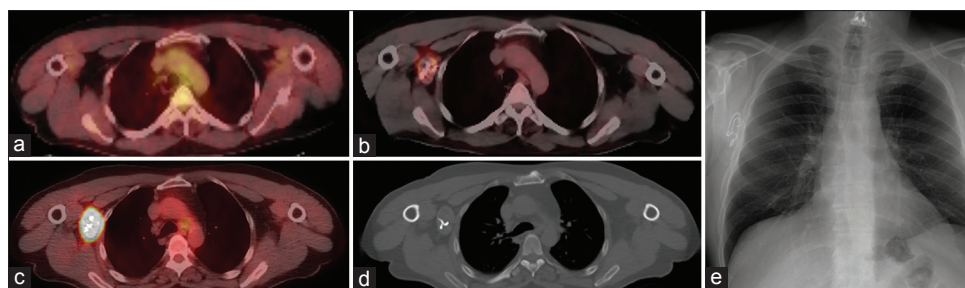


Figure 1: (a) Staging positron emission tomography/computed tomography not showing any axillary metastases, (b) Initial follow-up study showing a ^{18}F -fluorodeoxyglucose avid (SUV = 4.4) right axillary mass around radiopaque foreign body, (c) Follow-up positron emission tomography/computed tomography done after 2 years showing intense activity in the right axillary mass (SUV = 14.4) and (d) showing linear wavy hyperdense foreign body in the center of the mass, and (e) X-ray chest revealing a wavy appearance of foreign body suggesting retained surgical sponge

pathology confirmed the presence of retained surgical sponge with foreign body reaction in the surrounding soft tissues, consistent with gossypiboma.

Discussion

FDG-PET/CT is useful in staging, restaging, and response assessment of patients with malignant melanoma.^[1] Due to nonspecific nature of FDG accumulation, FDG uptake can also be seen in various infectious and inflammatory conditions and the knowledge of these entities helps in accurate interpretation.^[2] Few earlier case reports have demonstrated foreign body reaction/gossypiboma mimicking tumor in various locations including thorax, neck, and abdomen.^[3-7] Gossypiboma is defined as foreign body reaction and other inflammatory change which occurs secondary to a retained cotton material/surgical sponge. In our patient, linear hyperdense foci in the axilla were presumed to represent surgical clips, and thus the FDG uptake around them was felt to represent either postsurgical inflammatory changes or recurrent tumor. This is a potential pitfall in imaging as surgical clips are more commonly seen in the region of axilla and can appear similar on axial images. A careful review of CT images revealed the nonmetallic and wavy configuration of the foreign body which raised the suspicion of surgical sponge, which was then confirmed by X-ray. This case demonstrates the usefulness of CT images in interpreting CT and PET/CT images and that accumulation of FDG in postsurgical bed could be not only due to tumor and infection but also due to foreign body reaction around the retained surgical material.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have

given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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