

Rare Case of Cardiac Metastasis in a Patient with Cutaneous Squamous Cell Carcinoma of Foot Detected on ¹⁸F-Fluorodeoxyglucose Positron Emission Tomography–Computed Tomography

Abstract

Cutaneous squamous cell carcinoma (SCC) metastasizes most commonly to the regional lymph nodes and lungs. Metastasis to heart, although described in literature, is a very rare phenomenon. We present the ¹⁸F-fluorodeoxyglucose positron emission tomography–computed tomography findings in a 50-year-old woman who was a biopsy-proven case of SCC left foot, showing cardiac metastasis in addition to lymph nodes, lungs, and skeletal metastases.

Keywords: ¹⁸F-fluorodeoxyglucose positron emission tomography–computed tomography, cardiac metastasis, cutaneous squamous cell carcinoma

A 50-year-old woman presented to our department with a large fungating mass lesion involving the right foot region. Contrast-enhanced magnetic resonance imaging of right foot showed ill-defined heterogeneous mass involving skin, subcutaneous tissue of the heel region with associated focal erosion of posterior-inferior cortex of right calcaneum. Computed tomography (CT) abdomen pelvis showed right inguinal lymphadenopathy, following which the patient underwent right below knee amputation. As part of restaging workup, ¹⁸F-fluorodeoxyglucose positron emission tomography–computed tomography (FDG PET-CT) study was done, which showed FDG avid hypodense lesion involving the interventricular septum (IVS) adjacent to inferior wall of heart [Figure 1a showing MIP with black arrow; Figure 1f-i showing fused PET-CT and CT images, respectively] suggesting cardiac metastases. In addition to this, there were metastases involving right inguinal [Figure 1b and c showing PET-CT fused and CT images, respectively], right pelvic, prevascular lymph nodes [Figure 1d and e showing PET-CT fused and CT images, respectively], bilateral lungs, and left scapula. For confirmation of the cardiac metastasis and as a part of baseline cardiac evaluation, two-dimensional

echocardiography was done, which showed an ill-defined echogenic lesion involving the IVS and apex, measuring approximately 3.3 cm × 3.0 cm, with normal ejection fraction of 60% and no significant regional wall motion abnormality.

Cardiac metastasis is a rare finding. As the patients are often clinically silent or have nonspecific symptoms, metastases to the heart are difficult to diagnose and usually detected in the postmortem setting during an autopsy. When they present with symptoms, the manifestations include heart failure, arrhythmias, valvular disease, and cardiac tamponade. The most common primary cancers in patients with cardiac metastases include melanoma, mediastinal tumors, lung cancer, breast cancer, and leukemia.^[1] Four hypotheses have been believed for cardiac metastases, those include direct extension, hematologic spread, lymphatic spread, and intracavitary diffusion via the inferior vena cava or pulmonary veins.^[1-3] As to primary skin malignancies, there are several reports of metastatic malignant melanoma in the myocardium;^[4] however, there are only a few published case reports of metastatic squamous cell carcinoma (SCC) to the heart.^[5-8] With the increasing use of PET-CT in oncology, asymptomatic cardiac metastases are now getting detected more frequently. Reports of cardiac metastases on

Girish Kumar Parida,
Adarsh Kumar¹,
Sujata Mitra,
Akchata Suman,
Gopal Sonai Muthu

Departments of Nuclear Medicine and PET-CT and ¹Surgical Oncology, Tata Main Hospital, Jamshedpur, Jharkhand, India

Address for correspondence:
Dr. Girish Kumar Parida,
Department of Nuclear Medicine and PET-CT, Tata Main Hospital, Jamshedpur - 831 001, Jharkhand, India.
E-mail: grishh135@gmail.com

Received: 15-02-2020
Revised: 24-02-2020
Accepted: 21-03-2020
Published: 01-07-2020

Access this article online

Website: www.ijnm.in

DOI: 10.4103/ijnm.IJNM_31_20

Quick Response Code:



How to cite this article: Parida GK, Kumar A, Mitra S, Suman A, Muthu GS. Rare case of cardiac metastasis in a patient with cutaneous squamous cell carcinoma of foot detected on ¹⁸F-fluorodeoxyglucose positron emission Tomography–Computed tomography. Indian J Nucl Med 2020;35:258-9.

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

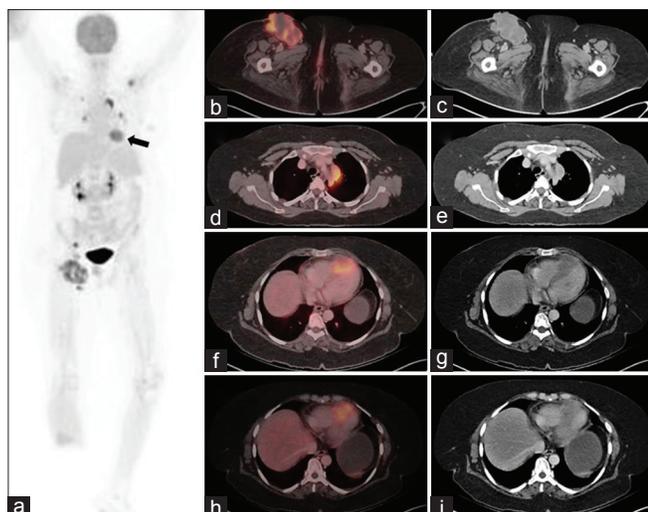


Figure 1: ^{18}F -fluorodeoxyglucose avid hypodense lesion involving the interventricular septum adjacent to inferior wall of heart, (a) showing MIP with black arrow and (f-i) showing fused positron emission tomography-computed tomographic and computed tomographic images. ^{18}F -fluorodeoxyglucose avid metastases involving right inguinal and prevascular lymph nodes, (b-e) showing fused positron emission tomography-computed tomographic and computed tomographic images

PET/CT are seen in melanoma,^[9] Ewing's sarcoma,^[10] renal cell carcinoma,^[11] breast cancer,^[12] upper aero-digestive tract,^[3] head-and-neck cancer,^[13] carcinoma rectum,^[14] to name a few, with no reports from cutaneous SCC. Our case is a valuable addition to the existing literature on myocardial metastases and also highlights the role of FDG PET/CT in the detection of such rare sites, especially in asymptomatic patients, which otherwise would have been undiagnosed.

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.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

- Bussani R, de-Giorgio F, Abbate A, Silvestri F. Cardiac metastases. *J Clin Pathol* 2007; 60:27-34.
- Malekzadeh S, Platon A, Poletti PA. Cardiac metastasis of tongue squamous cell carcinoma complicated by pulmonary embolism: A case report. *Medicine (Baltimore)* 2017;96:e7462.
- Puranik AD, Purandare NC, Sawant S, Agrawal A, Shah S, Jatale P, et al. Asymptomatic myocardial metastasis from cancers of upper aero-digestive tract detected on FDG PET/CT: A series of 4 cases. *Cancer Imaging* 2014;14:16.
- Aerts BR, Kock MC, Kofflard MJ, Plaisier PW. Cardiac metastasis of malignant melanoma: A case report. *Neth Heart J* 2014;22:39-41.
- Mohle J, Nickoloff BJ. Fatal cutaneous squamous cell carcinoma in a forty-three-year-old male. *J Dermatol Surg Oncol* 1986;12:276-9.
- Boukhalil P, Debek A. Images in clinical medicine. Squamous-cell carcinoma with pericardial metastases. *N Engl J Med* 2006;355:e24.
- Kypson AP, Anderson CA, Lochmuller CM, Dizon K, Rodriguez E. Squamous cell carcinoma of the pericardium found during coronary bypass surgery of possible cutaneous origin. *Ann Thorac Surg* 2007;84:1735-6.
- Mackenzie KA, Simcock JW, Lainchbury JG, Currie MJ, Lynn KL. Myocardial metastasis of cutaneous squamous cell carcinoma in a renal transplant recipient. *Transplant Proc* 2009;41:4414-5.
- Coccia P, Ruggiero A, Rufini V, Maurizi P, Attinà G, Marano R, et al. Cardiac metastases of Ewing sarcoma detected by ^{18}F -FDG PET/CT. *J Pediatr Hematol Oncol* 2012;34:236-8.
- Maurer AH, Burshteyn M, Adler LP, Steiner RM. How to differentiate benign versus malignant cardiac and paracardiac ^{18}F FDG uptake at oncologic PET/CT. *Radiographics* 2011;31:1287-305.
- Pinnamaneni N, Muthukrishnan A. Left ventricular myocardium metastasis in a patient with primary renal cell carcinoma detected by ^{18}F -FDG PET/CT. *Clin Nucl Med* 2012;37:e181-3.
- Johnson TR, Becker CR, Wintersperger BJ, Herzog P, Lenhard MS, Reiser MF. Images in cardiovascular medicine. Detection of cardiac metastasis by positron-emission tomography-computed tomography. *Circulation* 2005;112:e61-2.
- Kim JK, Sindhu K, Bakst RL. Cardiac metastasis in a patient with head and neck cancer: A case report and review of the literature. *Case Rep Otolaryngol* 2019;2019:9581259.
- Tripathy S, Parida GK, Naswa N, Jha P, Reddy S, Arun Raj ST. Right ventricle metastasis from carcinoma rectum: Findings on ^{18}F -fluorodeoxyglucose positron emission tomography-computed tomography. *Indian J Nucl Med* 2020;35:78-9.