

Sub-Diaphragmatic Haemangioma Suspected on F-18 Fdg Pet/Ct Confirmed by Rbc Scintigraphy

Abstract

A 53-year-old woman presented with left submandibular gland carcinoma. Contrast-enhanced computerized tomography done for staging revealed suspicious metastatic omental deposit adjacent to left hemi-diaphragm apart from primary and cervical nodal metastasis. Staging F-18 fluorodeoxyglucose (FDG) positron emission tomography-computed tomography showed high FDG uptake in the primary and metastatic left cervical lymph nodes. However, no FDG uptake was seen in left sub-diaphragmatic mass. Known vascular malformations sites in the left posterior triangle of the neck and liver hemangiomas also showed no uptake. This pattern of uptake raised a suspicion of multiple vascular malformations. Tc-99 m red blood cell scintigraphy was done which confirmed the nature of subdiaphragmatic lesion as haemangioma.

Keywords: Fluorodeoxyglucose positron emission tomography computed tomography, haemangioma, red blood cell scintigraphy

A 53-year-old female presented with recent swelling in the left submandibular region with another long-standing swelling in the left posttriangle of the neck. Fine-needle aspiration cytology obtained from the left submandibular gland mass revealed high-grade neoplasm with necrosis, cystic degeneration, and atypical mitosis. Contrast-enhanced computerized tomography of the neck and thorax for staging revealed a mass involving left submandibular gland with enhancing left level II lymph nodes. Vascular malformation in the right posterior triangle with hypodense lesions in liver was also seen. A suspected omental deposit adjacent to left hemi-diaphragm was also noted. Staging F-18 fluorodeoxyglucose (FDG) positron emission tomography/computed tomography (PET/CT) MIP image, as shown in Figure 1 (a) revealed hypermetabolic primary mass in the left submandibular gland (black arrowhead) with (b) inset axial hybrid image showing metastatic cervical lymph nodes (white arrowhead) and (c) axial FDG PET CT images also revealed nonavid mass lesion adjacent to left hemi-diaphragm (white arrow). Considering the rarity of non FDG omental deposit with an avid submandibular primary along with

the fact that there was known vascular malformations in the posterior triangle of the neck and liver, a possibility of hemangioma for the left subdiaphragmatic mass was suspected. Hence, (a and d) whole body Tc-99 m red blood cell (RBC) scintigraphy was performed which showed multiple foci of increased tracer accumulation (black arrows in 1 h image) in known sites. (e) Single-photon emission computed tomography (SPECT)-CT images of the abdomen revealed Tc-99 m RBC accumulation in the left sub-diaphragmatic mass (white arrow) too. Figure 2 shows progressive accumulation of tracer in hemangiomas in RBC scintigraphy and Figure 3 shows comparison of uptake between PET CT and RBC SPECT CT images.

Subdiaphragmatic hemangioma is a rare entity with few cases reported in the literature.^[1] The presence of sub-diaphragmatic mass in a known of malignancy raises the concern of distant metastases on structural imaging. Low to negligible uptake on FDG PET/CT is a known finding in hepatic hemangioma.^[2-5] However, to our best of knowledge, this is the first reported case of subdiaphragmatic hemangioma who underwent FDG PET-CT. Incidental findings on PET-CT which does

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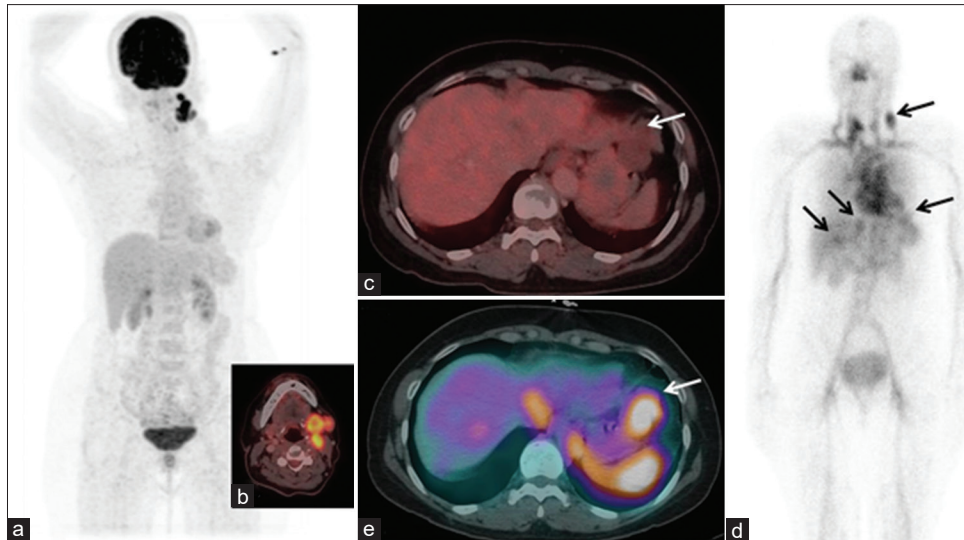


Figure 1: Staging F-18 fluorodeoxyglucose (FDG) PET/CT MIP image a) revealed hypermetabolic primary mass in left submandibular gland (black arrowhead) with (b) Inset axial hybrid image showing metastatic cervical lymph nodes (white arrowhead). c) Axial FDG PET CT images also revealed non avid mass lesion adjacent to the left hemi-diaphragm (white arrow). d) Whole body Tc-99m RBC scintigraphy was performed which showed multiple foci of increased tracer accumulation (black arrows in 1 hr image) in known sites. e) SPECT-CT images of the abdomen revealed Tc-99m RBC accumulation in the left subdiaphragmatic mass (white arrow) too

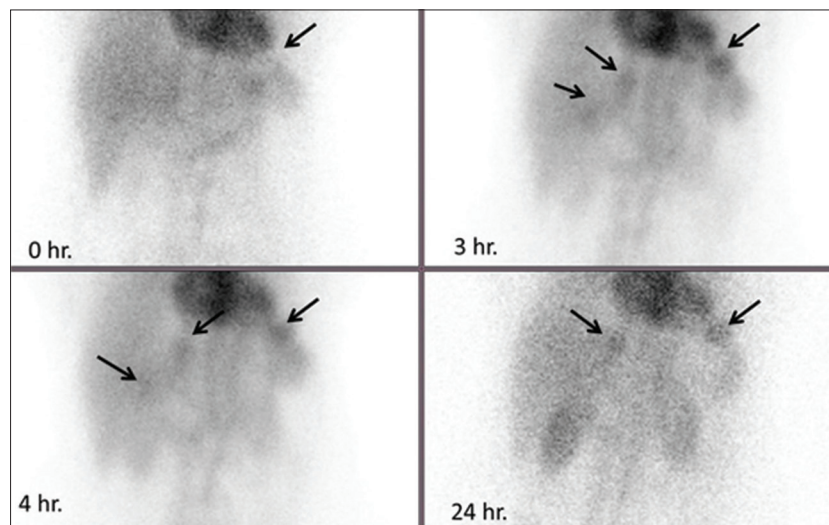


Figure 2: Static images of Tc-99m labelled RBC scintigraphy (in-vivo technique) at 1hr, 3hr, 4hr and 24 hr time points showed initial photopenia (black arrows) with progressive accumulation of radiotracer in left subdiaphragmatic lesion and liver haemangiomas

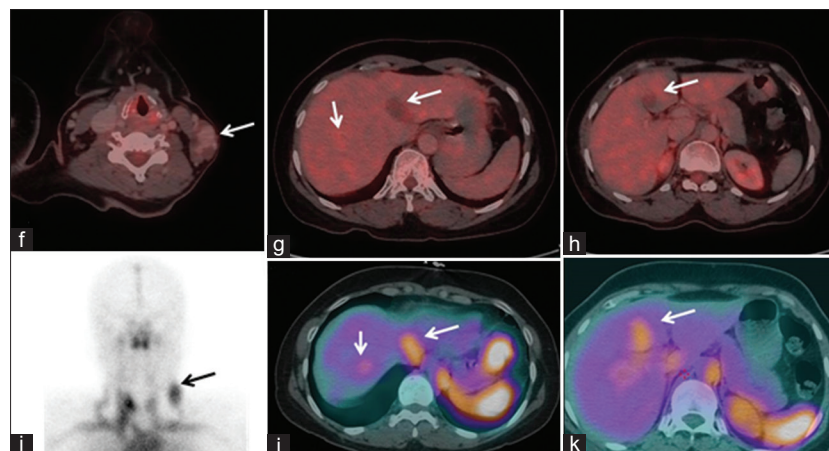


Figure 3: Upper row axial hybrid PET CT images reveals no metabolic activity in the vascular malformations in f) left sided posterior triangle of neck with g) segment IVa & VIII of liver and h) IVb liver lesions. The corresponding Tc-99m RBC images i), j) and k) show focal increased tracer uptake confirming haemangiomas

not fit the established disease pattern need confirmation and further evaluation. Accordingly, RBC scintigraphy was done for this patient. RBC scintigraphy is a sensitive modality for the diagnosis of haemangioma. Studies have shown whole-body RBC scintigraphy with SPECT/CT help to unmask the infrequent sites of hemangioma.^[6-8] RBC scintigraphy plays a complementary role to FDG PET/CT in such unusual cases.

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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