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CASE REPORT **Open Access**

FDG PET/CT findings in a rare case of synchronous primary malignant pericardial mesothelioma and nasopharyngeal carcinoma

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ABSTRACT
We presented a rare case of primary malignant epithelioid type pericardial mesothelioma and an undifferentiated nasopharyngeal carcinoma diagnosed synchronously.
CASE REPORT: A patient was screened for malignancy by computed tomography revealing massive pericardial effusion, pericardial thickening with mass and nodular lesions, and mediastinal multiple lymphadenomegaly suggesting preliminary diagnosis of mesothelioma. Then, the patient underwent FDG PET/CT scan to evaluate the metabolic characterization of pericardial lesions and staging of the disease. Intense FDG uptake in diffuse pericardial thickenings, mildly FDG uptake in pericardial fluid densities and hypermetabolic lymph nodes in the mediastinum were detected in PET/CT. Interestingly, PET/CT revealed another hypermetabolic mass in the nasopharynx considered as a secondary primary malignant lesion. He underwent radiotherapy for both malignancies. In follow up, despite a complete resolution of the nasopharyngeal carcinoma, unfortunately the pericardial mesothelioma was seen as metabolic stabile lesion.
DISCUSSION: This interesting case highlighted the usefulness of FDG/PET in pericardial mesothelioma for revealing unusual metastatic sites and probable synchronous malignancies.
KEY WORDS: pericardial mesothelioma; nasopharyngeal carcinoma; FDG; PET/CT
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INTRODUCTION

Malignant mesothelioma is a rare tumor with aggressive nature and fatal course. It arises from mesothelial cells, most common sites are pleura and peritoneum, respectively. Incidence of pericardial mesothelioma is less than 5% of all mesotheliomas. Although mesothelioma is caused by industrial pollution, especially asbestos, the patient's past history did not reveal any suspicious exposure. Computed tomography (CT) and magnetic resonance imaging (MRI) is useful in pericardial mesetholioma especially for evaluating pericardial thickening, pericardial effusion, relationship between tumor and surrounding tissues and operability (2, 3). However, ^{18}F-Fluorodeoxyglucose Positron Emission Tomography/Computed Tomography (FDG PET/CT) is known to be more effective in mesothelioma staging, restaging and treatment benefit assessment (4). Although there is an expert opinion on usefulness of FDG PET/CT for revealing tumor foci of primary malignant pericardial mesothelioma, there is only a few published cases before which enlight this issue (5, 6). Regional intrathoracic lymph nodes and lung are expected to be the first site of metastases of thoracic mesothelioma,

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extrathoracic metastases are rarely reported (7-10).

CASE REPORT

A 40 year-old male patient presented with fatigue, shortness of breath, loss of appetite, and occasional fever. Patient was screened for malignancy by computed tomography revealing massive pericardial effusion, pericardial thickening with mass and nodular lesions, and mediastinal multiple lymphadenomegaly suggesting preliminary diagnosis of mesothelioma. Then, the patient underwent FDG PET/CT scan to evaluate the metabolic characterization of pericardial lesions and staging of the disease.

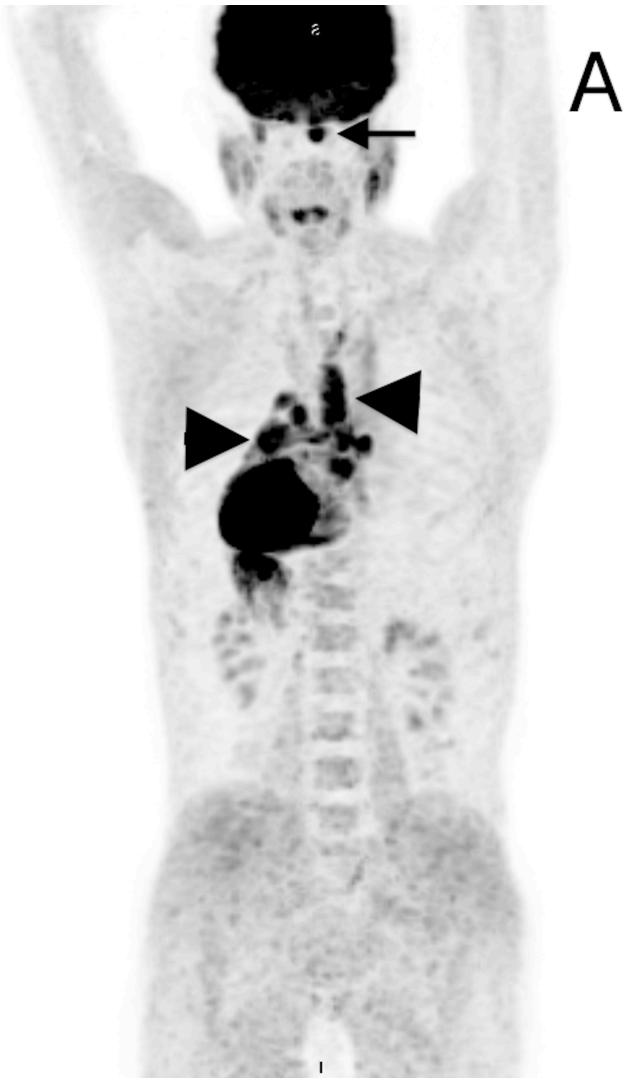

Figure 1 A. PET/CT images were obtained 60 minutes after intravenous injection of 10 mCi (370 MBq) of ^{18}F-FDG. Maximum intensity projection (MIP) image show intense FDG uptake in the nasopharynx (arrow) and thorax (arrowhead).

Intense FDG uptake in diffuse pericardial thickenings, mildly FDG uptake in pericardial fluid densities and hypermetabolic lymph nodes in the mediastinum were detected in PET/CT.

Interestingly, PET/CT revealed another hypermetabolic mass in the nasopharynx considered as a secondary primary malignant lesion. PET/CT did not reveal any other increased FDG uptake with suspicious malignant focus on the other parts of the body. Immunohistopathological examinations confirmed that two different malignancy occurred synchronous: A primary malignant epithelioid type pericardial mesothelioma and an undifferentiated nasopharyngeal carcinoma. Bilateral hypermetabolic mediastinal lymph nodes revealed by PET/CT investigation were histologically proven to be mesothelioma metastasis.

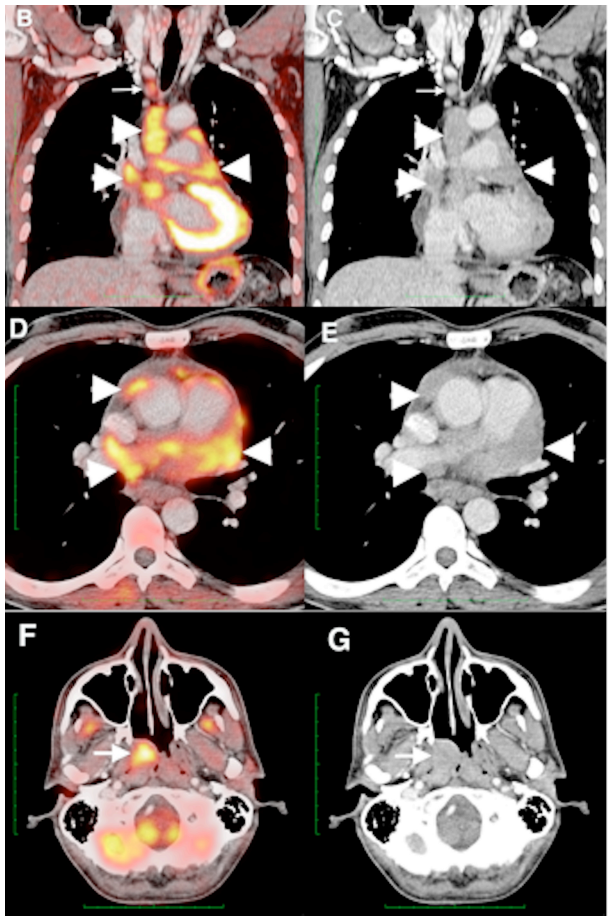

Figure 1 B-G. Low dose of IV contrast was administered. PET/CT images including fusion (B, D, F) and CT (C, E, G) revealed increased FDG uptake (SUVmax=8.3) in partly nodal and diffuse thickening in mass areas at pericardial zones (arrowheads).

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In addition, massive fluid density showing less dense hypermetabolism and multiple lymph nodes (SUVmax=4.2) with increased FDG uptake to be considered metastatic were observed in bilateral mediastinal nodes (thin arrow). Additionally, a mass lesion with increased FDG uptake (SUVmax=7.2) to the right of nasopharynx (arrow), 1.8 cm in diameter on axial CT plan, considered to be malignant was detected (F, G). No other increased FDG uptake focus of suspicious malignancy was observed at bilateral cervical lymphatic stations and other body parts.

He underwent radiotherapy for both malignancies. In follow up, despite a complete resolution of the nasopharyngeal carcinoma, unfortunately the pericardial mesothelioma was seen as metabolic stabile lesion.

DISCUSSION

Synchronous tumors detected using FDG PET/CT with pleural or peritoneal mesothelioma were reported, but synchronous nasopharyngeal carcinoma and malignant pleural mesothelioma has not been reported previously (11-13).

This interesting case highlighted the usefulness of FDG/PET in pericardial mesothelioma for revealing unusual metastatic sites and probable synchronous malignancies.

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