

Pleural Mesothelioma with Peritoneal Involvement: Diagnosed on 18F-FDG Positron Emission Tomography/Computed Tomography

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Abstract

Pleural mesothelioma with metastatic peritoneal involvement is an extremely rare finding. Very few cases are reported in the literature. We present a case of pleural mesothelioma referred for F-18-fluorodeoxyglucose positron emission tomography/computed tomography (PET/CT). There was extension of pleural thickening into the omentum and peritoneum. This case demonstrates the role of F-18-fluorodeoxyglucose PET/CT in detecting other sites of involvement in case of malignant mesothelioma.

Keywords: Malignant mesothelioma, pleuroperitoneal mesothelioma, positron emission tomography/computed tomography

A 77-year-old-male presented with a history of asbestos exposure and histologically proven malignant pleural mesothelioma. The patient was referred for 2-[fluorine-18] fluoro-2-deoxy-d-glucose positron emission tomography/computed tomography (FDG PET/CT) for initial disease assessment which revealed extensive FDG avid irregular mass-like thickening involving right parietal and visceral pleura, leading to collapse of the underlying lung [Figure 1]. Along with that, FDG avid diffuse peritoneal and mesenteric thickening was noted [Figure 1]. Histopathology from the peritoneal thickening was not done due to poor patient compliance; however, due to extensive right pleural disease and increased FDG uptake in the peritoneum, the diagnosis of benign peritoneal involvement is less likely and of mesothelioma involvement is more likely. Malignant mesothelioma is a rare malignancy which originates from the cells lining the mesothelial surfaces, such as pleura, peritoneum, pericardium, and tunica vaginalis. The pleural form being the most common subtype,^[1] however, peritoneal mesothelioma was the first to be described by Miller and Wynn (1908). The malignant peritoneal mesothelioma constitutes 12.5%–25% of all malignant mesotheliomas.^[2] Mostly, it occurs in middle-aged men who commonly present with the complaints of abdominal pain or a feeling of fullness, abdominal distention or increasing abdominal girth, nausea, anorexia, and weight loss.^[3] FDG PET

for the diagnosis of malignant pleural malignancy (MPM) has been finding increasing use recently.^[4] The principle is that the increased glucose metabolism of the tumor cells helps to identify malignancy at PET. The standardized uptake value (SUV), which is a semiquantitative measure of the metabolic activity of a lesion, is significantly increased in MPM than in benign pleural diseases such as inflammatory pleuritis and asbestos-related pleural thickening.^[4,5] PET-CT provides both anatomic and metabolic information about a lesion. The sensitivity of FDG PET/CT is higher for detecting lymph node and distant metastases, thereby helps in staging.^[6] Furthermore, higher SUV in FDG PET/CT is associated with poor prognosis.^[7] FDG PET/CT also has higher accuracy for treatment response evaluation in malignant mesothelioma.^[8] Our case also emphasizes that FDG PET/CT plays an important role in detecting the extent of the disease by detection of pleural as well as peritoneal lesion more so because it is a whole-body scan which has an advantage of PET over CT alone. Thus,

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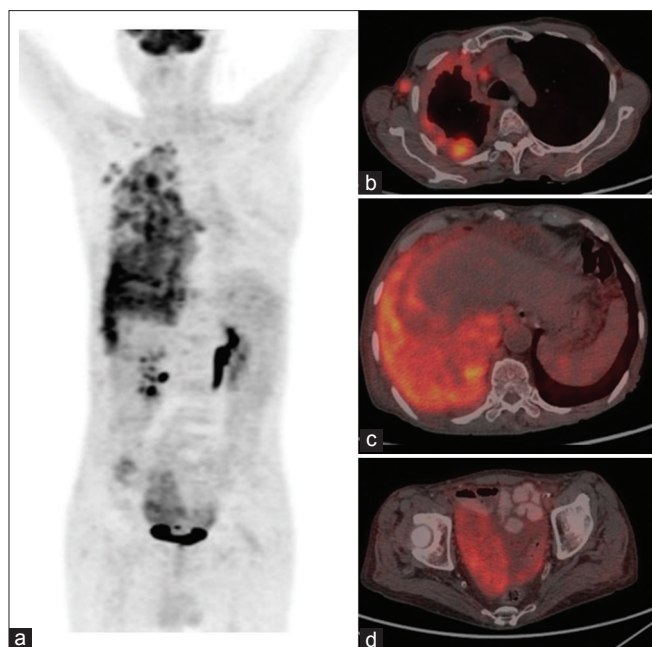


Figure 1: (a) Maximum intensity projection image showing fluorodeoxyglucose avid right pleural thickening along with fluorodeoxyglucose uptake in peritoneum, predominantly toward the right side of pelvic cavity. (b and c) Axial images showing fluorodeoxyglucose avid nodular thickening along costal, mediastinal, and diaphragmatic pleura. (d) Axial image of pelvis showing extensive peritoneal and mesenteric involvement

18F-FDG PET/CT is of great importance in the evaluation and management of malignant mesothelioma.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient has given his consent for his images and other clinical information to be

reported in the journal. The patient understands that his name and initials will not be published and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. van Meerbeeck JP, Scherpereel A, Surmont VF, Baas P. Malignant pleural mesothelioma: The standard of care and challenges for future management. *Crit Rev Oncol Hematol* 2011;78:92-111.
2. Saraya T, Yokoyama T, Ishii H, Tanaka Y, Tsujimoto N, Ogawa Y, *et al.* A case of malignant peritoneal mesothelioma revealed with limitation of PET-CT in the diagnosis of thoracic metastasis. *J Thorac Dis* 2013;5:E11-6.
3. Nowak AK, Francis RJ, Phillips MJ, Millward MJ, van der Schaaf AA, Boucek J. A novel prognostic model for malignant mesothelioma incorporating quantitative FDG-PET imaging with clinical parameters. *Clin Cancer Res* 2010;16:2409-17.
4. Bénard F, Sterman D, Smith RJ, Kaiser LR, Albelda SM, Alavi A. Metabolic imaging of malignant pleural mesothelioma with fluorodeoxyglucose positron emission tomography. *Chest* 1998;114:713-22.
5. Hillerdal G. Malignant mesothelioma 1982: Review of 4710 published cases. *Br J Dis Chest* 1983;77:321-43.
6. Zhuang H, Pourdehnad M, Lambright ES, Yamamoto AJ, Lanuti M, Li P, *et al.* Dual time point 18F-FDG PET imaging for differentiating malignant from inflammatory processes. *J Nucl Med* 2001;42:1412-7.
7. Gerbaudo VH, Mamede M, Trotman-Dickenson B, Hatabu H, Sugarbaker DJ. FDG PET/CT patterns of treatment failure of malignant pleural mesothelioma: Relationship to histologic type, treatment algorithm, and survival. *Eur J Nucl Med Mol Imaging* 2011;38:810-21.
8. Domènech-Villardell A, Rasiej MJ, Taub RN, Ichise M. Clinical utility of 18F-FDG positron emission tomography in malignant peritoneal mesothelioma. *Q J Nucl Med Mol Imaging* 2016;60:54-61.