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Case report

Multiple distant metastases in a case of malignant pleural mesothelioma

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A B S T R A C T

Introduction: Malignant pleural mesothelioma (MPM) is a malignant of mesodermal neoplasm and arises from multipotential mesothelial or subserosal cells of the pleura, pericardium and peritoneum.
Case: A seventy five year-old male patient was admitted with chest and lower limb pain. He was a heavy smoker and exposed to environmental asbestos in his childhood. PET-CT scans showed multiple pathological FDG uptakes in lungs and other organs. Biopsies performed from lung and anterior thigh muscles were reported as epitheloid type malignant pleural mesothelioma.
Discussion: We emphasize that unexpected distant metastases can be observed in MPM and occasionally primary diagnosis can be determined by the biopsy of the metastatic regions. This case also points out the role of PET-CT in the staging of malign mesothelioma by determining different metastatic sites.

Introduction

Malignant pleural mesothelioma (MPM) is a malignant of mesodermal neoplasm and arises from multipotential mesothelial or subserosal cells of the pleura, pericardium and peritoneum. Three different pathological forms are defined: epitheloid (60%), sarcomatoid (10–20%) and biphasic patterns (20–30%) [1].

MPM is a rare tumor, however the incidence is increasing and the mortality is high. MPM behaves aggressively and complete responses to currently available treatment are occasionally observed. A median progression free survival is 6 months, while overall survival is 12 months, with a reported rate of 30–40%, response rates [2–4].

Generally, metastatic disease is not depicted at the time of initial diagnosis. Major sites for metastases are regional lymph nodes, lung, liver, adrenal glands, and kidneys [5]. In a postmortem study extrapleural dissemination was found in 87.7% of cases. Tumor dissemination in extrathoracic sites was seen liver (31.9%), spleen (10.8%), thyroid (6.9%), and the brain (3.0%) [6].

Distant metastases of MPM to the multiple skeletal muscle, endocardium and skin together have not been reported before. We present an epiteloid type MPM case with distant metastases to skeletal muscles (pathologically confirmed), endocardium and subcutaneous tissue.

Case

A seventy five year-old male patient admitted to our pulmonary diseases clinic with chest and lower limb pain. He was a heavy smoker and exposed to environmental asbestos in his childhood. His medical history was otherwise unremarkable. In physical examination respiratory system was normal. The thigh muscles were observed to be thick, hard and palpation was painful. There were few nodular lesions on the scalp which he reported to appear 2 months ago as well as the femoral thickening accompanying.

In his routine blood and biochemistry tests sedimentation rate was 61 mm/h, potassium 5, 3 was mMol/L, C reactive protein was 169 mg/L and other findings were normal. Chest X-ray showed upper mediastinal enlargement and a mass in left upper zone (Fig. 1). In his thorax CT a 5 cm scale pleural mass in the left mediastinal and lateral pleural region, left hilar 2 cm scale

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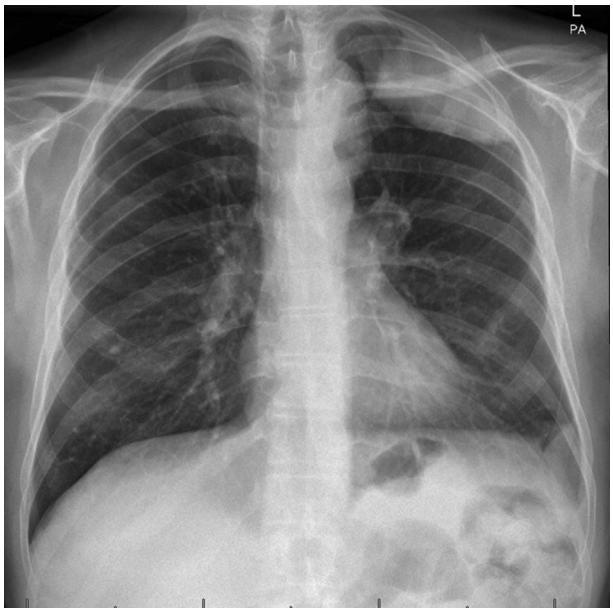

Fig. 1. Chest X-ray.

lymphadenopathy and pleural thickening in left lung, 1 cm pulmonary nodule in right lung and right pleural calcification were seen.

In his PET-CT; pathological FDG uptakes were seen in the localization of ligamenthum nuchea (C2–3 level), right paraspinal muscle (C6), posterior scalp, paratracheal and left hilar lymph nodes, left apical mass, left pleura in lower and middle zone, left diaphragma, anterior pericardium, interventricular septum, left axilla, right 4. costochondral region, liver segment 8, right paraspinal muscle in L3 level, right abdominal oblique muscles, bilateral gluteal muscles and bilateral thigh muscles (Figs. 2–4).

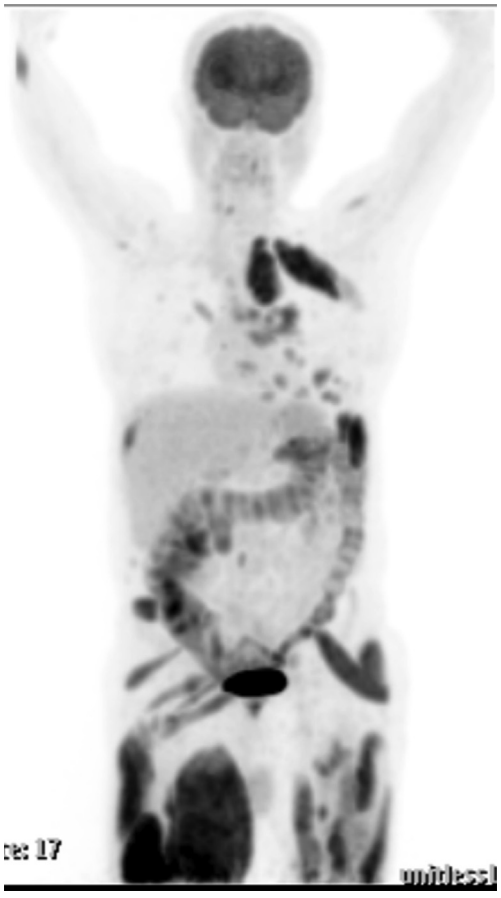

Fig. 2. PET scan of whole body.

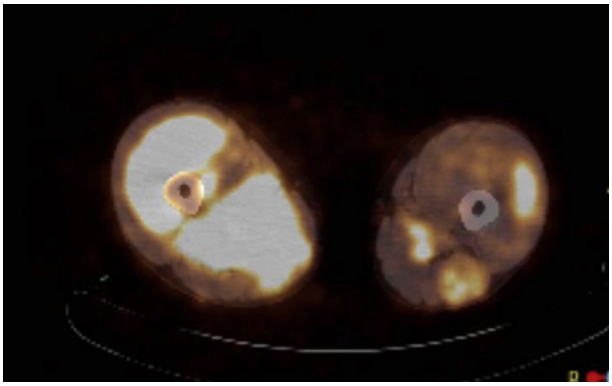

Fig. 3. PET-CT scan of legs.

Tru-cut biopsy was performed from the left apical mass. And epitheloid type malignant pleural mesothelioma was the diagnose (Fig. 5). Another biopsy performed from anterior thigh muscles. The pathological pattern was the same with the biopsy taken from lungs (Fig. 6).

Discussion

Most (>90%) mesothelioma cases are pleura originated, and it is generally perceived as a locally aggressive cancer [6]. Despite currently available systemic chemotherapy, long term survival in patients with MPM is poor. MPM is a kind of preterminal condition with an expected life expectancy of less than 12 months [7].

Currently, the major modality for tumor staging has become PET-CT. The utility of PET-CT in malignant pleural mesothelioma is contraversial; however, malignant pleural mesothelioma is clearly FDG avid, and PET may help in staging as well as giving prognostic information [8,9]. PET-CT sensitivity and specificity for pleural lesions are 90–95% and 75–80% respectively [10]. In this case PET-CT scans showed us multiple distant pathological FDG uptakes in paraspinal muscles, posterior scalp, rib, interventricular septum, liver, right abdominal oblic muscles, bilateral gluteal and thigh muscles. And also locally invasion was seen in lymph nodes, diaphragm and pericardium. So PET-CT should be realized for all MPM patients for staging and detecting asymptomatic distant metastasis.

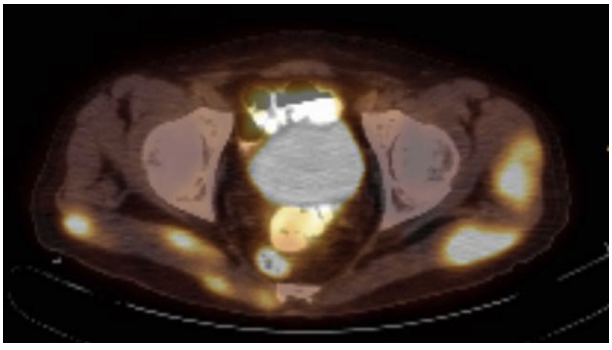

Fig. 4. PET-CT scan of pelvic region.

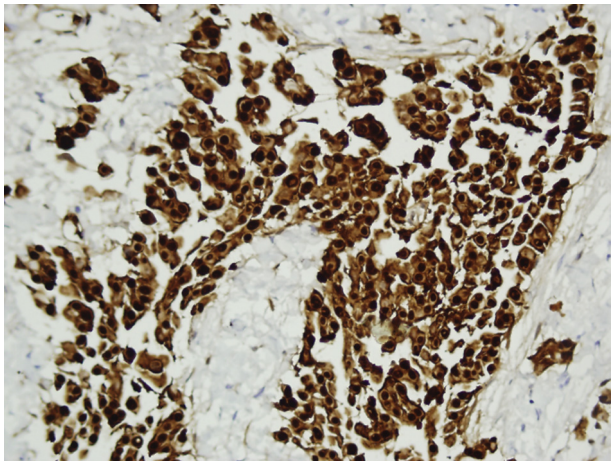

Fig. 5. Lung: Neoplastic cells positive staining with calretinin.

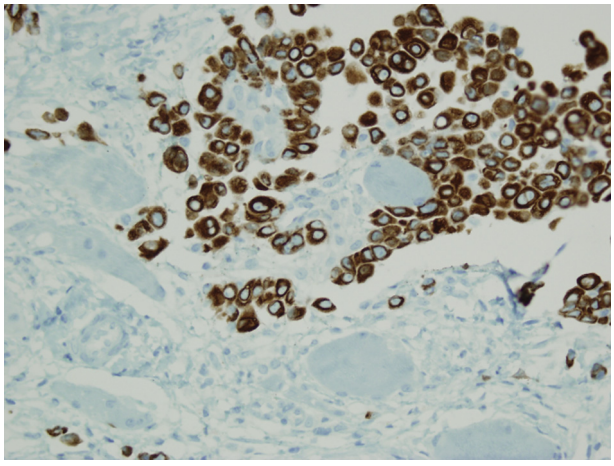

Fig. 6. Muscle byopsy:positivite staining with CK5/6.

The FDG uptake of the lesions in the left lung was 8.3, while this value was observed 9.4 in thigh muscles. Calretinin and cytokeratins 5/6 are important immunohistochemical mesothelial markers substantiating diagnosis for an epitheloid mesothelioma [1]. In that case these markers found strongly positive in tumor cells on immunohistochemical staining. Transthoracic biopsy taken from the left lung revealed epitheloid type malignant pleural mesothelioma, and the biopsy taken from thigh muscles was also concordant with epitheloid type malignant mesothelioma.

Distant metastasis of a malignant mesothelioma is uncommon [5]. Previous studies have reported conflicting results on the metastatic behavior of MPM subtypes. And pleomorphic epithelioid mesothelioma that appears to have distinct clinical characteristics [6]. Regional lymph nodes are the major metastatic sites of MPM which have been reported in 40% of the cases [10]. Skeletal muscle metastasis was described in only one case and subcutaneous nodules in few cases before [11–13].

We presented this patient for the interestingness due to unusual and previously undefined diffuse metastasis of malign mesothelioma. We emphasize that unexpected distant metastases can be seen in MPM and occasionally primary diagnosis can be made by the biopsy of the metastatic regions. This case also points out the role of PET-CT in the staging of malign mesothelioma by determining different metastatic sites.

Note: The patient is alive up to day (14 months after diagnosis) with cisplatin and pemetrexed therapy.

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