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Black Pleural Effusion Due to Metastatic Melanoma: A Case Report.

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ABSTRACT

Black pleural effusion is seen in numerous conditions, including fungal infections, melanoma and haemorrhage. The examination of cells in fluid along with special stains performed on the same can lead to definite diagnosis in such cases. About 10 cases of black pleural effusion have been reported in literature. However, we present a unique case of pleural effusion due to melanoma, without a known primary skin lesion but from lung.

Keywords: Black, effusion, melanoma

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INTRODUCTION

Pleural effusion is a common presentation, affecting a wide range of patients. The causes include cancer, heart failure, pneumonia, tuberculosis, pericardial diseases, and cirrhosis, the proportion of each varying depending on the geographic location. Pleural fluid analysis is one of the first invasive procedures to be performed after initial imaging studies. Appearance of the fluid can be diagnostic many a times including pus in empyema, putrid odour indicating anaerobic infections, milky in chylothorax, etc [1]. Black pleural effusion is equally diagnostic being seen in rare cases including fungal infections, malignant melanoma, haemorrhage and haemolysis, and other rare causes [2,3].

Effusions in malignant melanoma may occur as the primary evidence of metastases, sometimes many years after the treatment of the primary tumor. Thus, the identification of this tumor type may be of considerable diagnostic importance. In fact, this diagnosis should always be considered in effusions with a population of malignant cells of carcinomatous or unusual configuration in the absence of a known primary tumor. The presence of melanin pigment in tumor cells is characteristic of malignant melanoma.

Case Report

A 64 year old male patient presented with breathlessness. On examination, vitals were stable. Clinical examination showed decreased breath sounds. CT Thorax showed bronchogenic carcinoma with intrapulmonary and liver metastasis. Chest X-ray showed pleural effusion. Blood investigations done were within normal limits. Computed tomography showed a well-defined irregular heterogenously enhancing mass lesion with spiculated margins and necrotic areas within involving the superior, medial basal and lateral basal segments of the lower lobe of left lung causing abrupt cut off of left lower lobe bronchus and encasing left pulmonary veins and lower lobar artery, likely malignant (Figure 1 a&b). Pleural fluid aspiration was done. Examination of the fluid was consistent with exudative pleural effusion. On microscopy, smears showed benign and reactive mesothelial cells, with few showing emperipolesis along with numerous cells with intracytoplasmic melanin pigment obscuring nuclear details, occasional pigment cells showing binucleation and few show prominent nucleoli. Background showed lymphocytes and few histiocytes (Figure 2). Masson Fontana for melanin was positive (Figure 3). Pearls Prussian blue for hemosiderin was negative. Cell block confirmed the cell morphology and HMB45 (Figure 4) done on the cell block was positive in neoplastic cells. Lymph node biopsy was planned but the patient went to higher centre for further management.

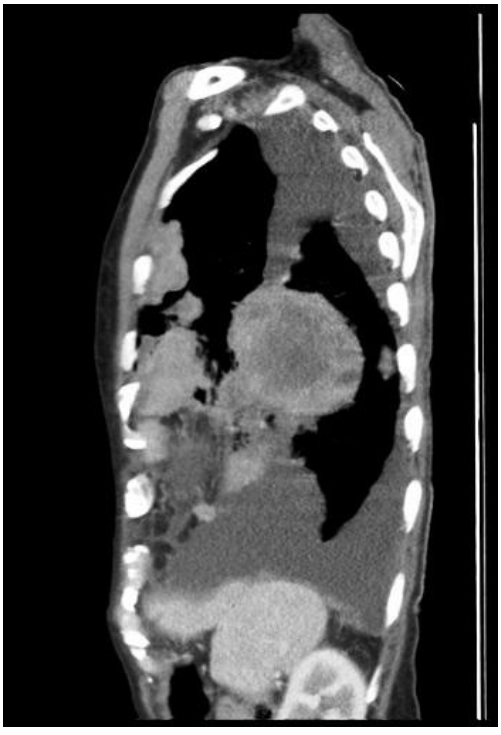

Figure 1a

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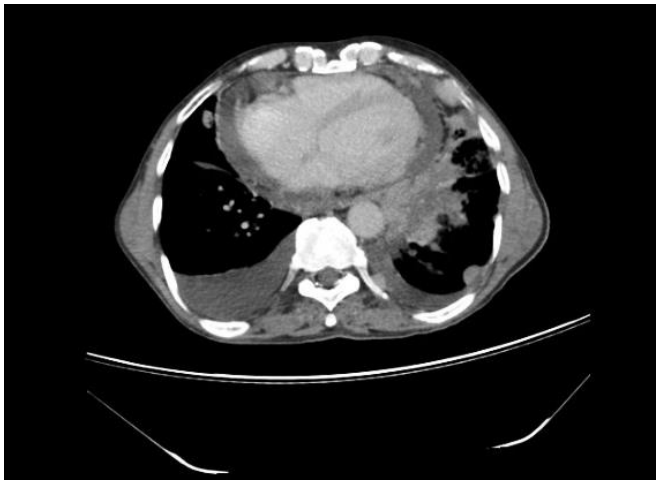

Figure 1b

Figure 1 (a&b): Computed tomography showing irregular heterogenously enhancing mass lesion with spiculated margins and necrotic areas within involving the lower lobe of left lung.

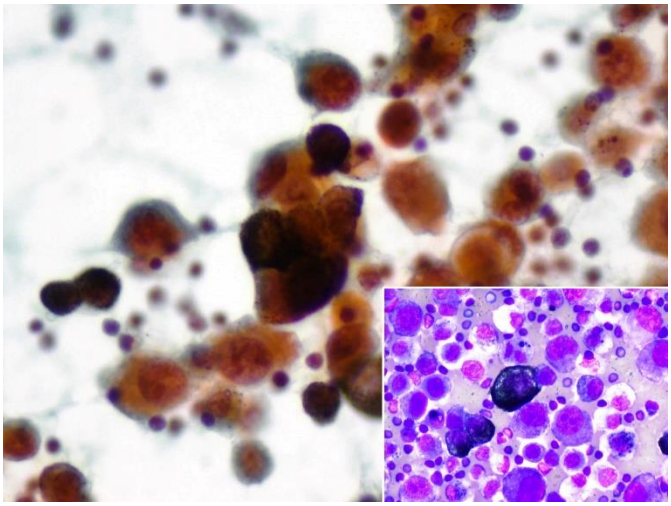

Figure 2: Cellular smears with few aggregates and singly scattered malignant cells with moderate to abundant cytoplasm with intracytoplasmic dark brown pigment obscuring nuclear details. (Pap stain, Inset – MGG, x200).

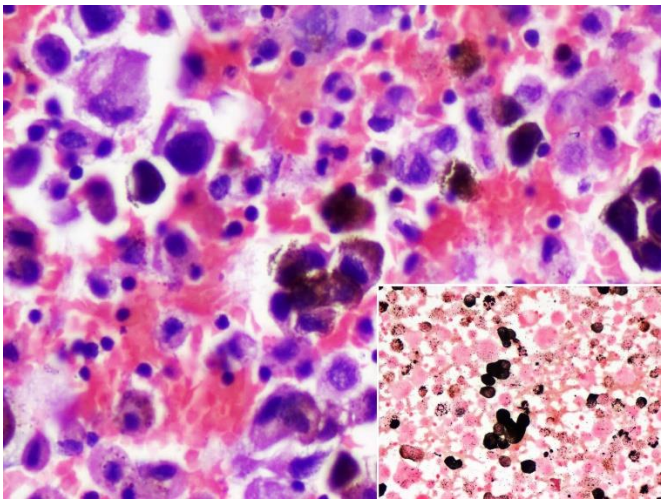

Figure 3: Cell block showing malignant clusters against a background of reactive mesothelial cells (H&E, Inset – Masson Fontana stain, x200).

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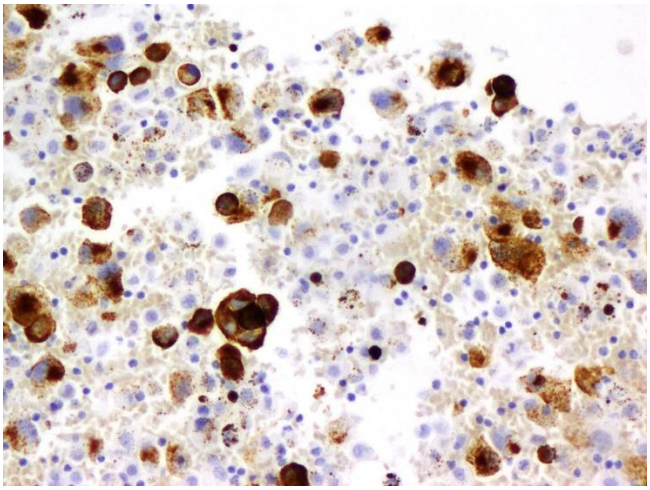

Figure 4: Immunohistochemistry with HMB45 showing positive reaction (x200).

DISCUSSION

Pleural effusions are found in a variety of medical conditions including heart failure, infections, malignancies and trauma. Diagnosis of new pleural effusions is often achieved by thoracentesis. A further distinction between exudative and transudative fluid helps narrow the differential diagnosis [4]. Exudates are commonly found in inflammatory processes including infection, whereas transudates are a result of increased hydrostatic pressure such as in cirrhosis, heart failure, and nephrotic syndrome. An initial characteristic of pleural fluid that sometimes may be overlooked is its gross macroscopic appearance. White or milky effusions are suggestive of purulent infections like empyema or chylothorax, whereas serous or yellow effusions are usually transudative in nature. Hemorrhagic pleural effusions appear blood tinged and are classically associated with hemothorax and malignancy. While yellow and red effusions are common findings, black effusions are exceedingly rare. To date, there have been only 10 total cases of black pleural fluid reported [2,3]. Etiology included are fungal infections due to Aspergillus niger or Rhizopus oryzae and charcoal-containing empyema [2,3]. Furthermore, only few previous cases have been attributable to metastatic malignant melanoma.

We present a case of pleural effusion caused by metastatic melanoma. In the 2 other reported cases, the patients were known cases of malignant melanoma and presented with chest pain, breathlessness, and cough [5,6]. Drainage of pleural fluid and cytological analysis revealed melanin-containing malignant cells. The black color of pleural effusions in metastatic melanoma is caused by the presence of melanocytes in the pleural fluid. In our case, pleural cytology similarly revealed abundant melanocytes. Additionally, the low pH and glucose levels were consistent with a large tumor burden. This patient however did not have any known primary melanoma. Hence, it was considered as primary melanoma of lung with metastatic pleural effusion.

It is important to determine the etiology of the black pleural effusion and to keep metastatic melanoma as part of the differential diagnosis. Metastatic melanoma carries a very poor survival rate, and efforts must be made to diagnose this disease as early as possible. Diagnostic delay can lead to severe complications, most notably death. This case demonstrates that the finding of a black pleural effusion in an undiagnosed patient should create a high index of suspicion for melanoma.

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