case report

Recurrence of malignant melanoma presenting as black-colored pyopneumothorax: a rare entity

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We report a 63-year-old patient with black-colored pus (pyopneumothorax) resulting from an infected pleural effusion associated with metastatic malignant melanoma of the skin. The patient was also positive for *Pseudomonas*, so the color was unexpected. Although rare, malignant melanoma can present as a black pleural effusion due to the presence of melanocytes in the pleural fluid. Black pleural fluid should raise the suspicion of malignant melanoma.

SIMILAR CASES PUBLISHED: Nine cases of black pleural effusion due to different causes have been reported.[1,2] Three cases of black pleural effusion due to metastatic malignant melanoma are published.[2,6,7]

Pleural effusion in many medical conditions may vary in color and can be colorless, straw-colored, hemorrhagic or rarely black in color. Black-colored pleural effusion with melanoma has been reported rarely.[1,2] Malignant melanomas are a relatively rare carcinoma, constituting 1% of all malignancies and 3% of all skin malignancies; their incidence has increased in the last few decades.[3,4] Pleural effusion is a very rare complication of malignant melanoma.[5] We report a case of recurrence of malignant melanoma presenting as a black-colored pyopneumothorax in a patient with surgically treated plantar malignant melanoma.

CASE

On admission, a 63-year-old male smoker had shortness of breath, chest pain for two month, and high-grade fever for the previous 15 days. Shortness of breath was slowly progressive, chest pain was severe, involving the right side of the chest up to the abdomen. There was loss of appetite and weight loss in the 3 months before examination. The patient had a history of plantar pigmented skin over the sole of the right foot that was surgically excised 3 years back leaving behind no residues in all CT scans of body. He had been asymptomatic since surgery. Physical examination revealed clubbing and a scar over the ventral aspect of the right foot. The patient was febrile but local temperature was raised over the right chest and right hypochondrium. Tenderness had been noted over the right hypochondrium. A mass-like cluster of lymph nodes was seen over the right inguinal region, which was mobile, suggesting nonadherence to deeper structures. A chest radiograph posterior-anterior showed multiple cannon ball secondaries over both lungs along with left parahilar irregular homogenous opacity and a horizontal free fluid level over the right lung field suggestive of right hydropneumothorax. Ultrasonography of the abdomen showed an 84×87 mm size hepatic abscess in the right lobe of the liver. A CT scan of the chest (**Figure 1**) showed a right-sided hydropneumothorax and an irregular left parahilar mass with multiple cannon ball opacities in the left lung field.

Ultrasonographic guided aspiration of the hepatic abscess discovered a thick yellowish pus that was sent for culture and sensitivity. A right inguinal lymph node

Figure 1. CT chest showing right hydropneumothorax, multiple cannon ball secondaries scattered throughout both lung field and a large cavitary parahilar mass.

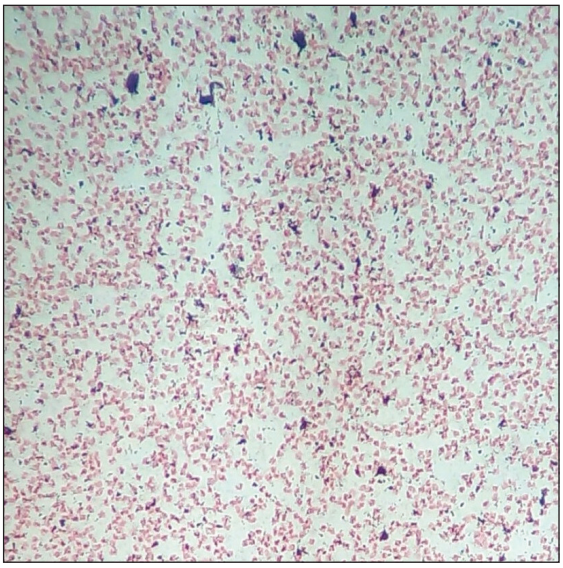

Figure 3. Pleural fluid cytology using Fontana-Masson stain showing isolated cells and clusters of melanoma cell in low power field.

Figure 2. Black-colored pus collected in intercostal tube.

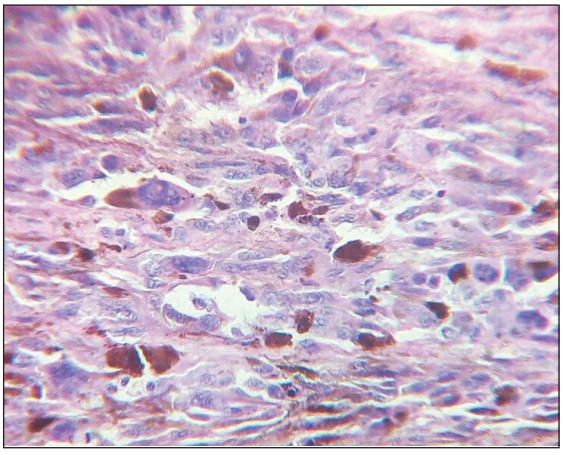

Figure 4. Tumor cells showing indistinct cytoplasmic borders, abundant cytoplasm, eosinophilic macronucleoli, and brisk mitotic activity.

excisional biopsy was taken. On placing an Intercostal chest tube drain, there was discharge of 3.5 L of a black-colored, foul smelling, initially thick and later serous fluid (**Figure 2**). Culture and sensitivity of the liver abscess and pleural fluid showed growth of *Pseudomonas* that was susceptible to amikacin and linezolid. Pleural fluid cytology (**Figure 3**) and inguinal lymph node biopsy showed malignant cells with brown melanin pigment (**Figure 4**). Immunohistochemistry was positive for S100 and HMB 45 pleurodesis using 2 mL of vincristine in 50 mL of saline. The patient responded well to antibiotics and was sent to oncology for palliative care.

DISCUSSION

Pleural effusion, as in many medical conditions that vary in colour in gross appearance, can be colorless, straw, hemorrhagic or rarely black. One review

enumerated causes of rare black effusion: infection (*Aspergillus* and *Rhizopus*), malignant melanoma due to melanin pigment, hemorrhage and hemolysis and other causes (charcoal-containing empyema).[1] Nine cases of black effusion are reported in the English literature due to various reasons.[1,2] Our case is a unique case of black pus due to melanoma because it presented as pyopneumothorax while others were serous. It was also positive for *Pseudomonas* and the black color was unexpected. In 3 other cases of black effusion due to metastatic malignant melanoma, all presented with chest pain, breathlessness and cough. The pleural fluid showed malignant cells on cytology.[2,6,7] Black-colored pleural effusion in melanoma is due to the presence of melanocytes in the pleural fluid. In our patient, pleural cytology also revealed abundant melanocytes. Melanomas most commonly metastasize to the lung, liver, brain and bone.[4] Intrathoracic metastasis most commonly present as multiple or solitary pulmonary nodules and can present as hilar or mediastinal lymphadenopathy, isolated pleural effusion, extra pleural mass, or lytic bone lesion.[5] Recurrence has been reported in only 0.65%-6.7% 10-12 year after surgical excision,[8] of which 48.2% of them recurred in regional lymph nodes followed by the lung and inguinal lymph nodes. In our case recurrence was observed in the lung as a nodule, pleura as black pyopneumothorax and inguinal lymphadenopathy.

Our patient at the time of presentation had multiple bilateral pulmonary nodules with right sided pleural effusion. In a study on 130 patients with malignant melanoma with intrathoracic involvement, 2% presented with pleural effusion and multiple nodules were more common than a solitary pulmonary nodule, which is reported in 10% of cases.[5] Pulmonary metastasis as only manifestation is reported in 7-9% of cases of cutaneous malignant melanoma.[9]

Our patient spent the asymptomatic phase of three years after local excision of plantar pigmented skin until he developed a liver abscess and right-sided pleural effusion. Simultaneous and contagious spread from the abscess may have resulted in pyopneumothorax. In our case, malignant melanoma was proved by histology of the inguinal lymph node biopsy and a smear from the pleural fluid. The prognosis is poor in such cases of distant metastases due to malignant melanoma and in malignant effusion, pleurodesis is performed as part of palliative care. Talc and bleomycin are commonly used as sclerosing agents in malignant effusion.[10] Povidone-iodine and autologous blood are also used but we tried vincristine, which was successful as no recurrent filling was seen in a 3-month follow up.

To conclude, although rare, black pleural fluid should raise a suspicion of malignant melanoma.

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