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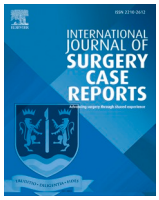

Case report

Transdiaphragmatic sarcomatoid carcinoma of the lung: A case report

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ABSTRACT

Introduction: Pulmonary sarcomatoid carcinoma is a very rare primary tumor of the lung. Although usually aggressive, these tumors have not been described previously to invade through the diaphragm into the liver. We present a patient with a pulmonary sarcomatoid carcinoma with transdiaphragmatic spread into the dome of the liver.

Presentation of case: An 82-year-old female with a lifetime non-smoking history presented with generalized fatigue, fever, night sweats, cough, and pleuritic chest pain. She had recently traveled to the western United States. Additionally, she had recently undergone periodontal deep cleaning with no peri-procedural antibiotics. Laboratory testing was significant for a leukocytosis of 13.5 white blood cells per microliter and a negative viral panel. Computed tomography and magnetic resonance imaging revealed a large heterogeneous mass extending from the right pulmonary hilum through the diaphragm. Although initial radiology reports suggested hepatic abscess, percutaneous fine needle aspiration was performed. Biopsy revealed pulmonary sarcomatoid carcinoma. She was begun on systemic treatment.

Discussion: Pulmonary sarcomatoid carcinoma can exhibit transdiaphragmatic invasion into the liver. This clinical situation can easily be confused with a hepatic abscess, but suspicion should remain for abscess. Clinical suspicion for neoplasm should warrant biopsy when technically possible.

Conclusion: Although hepatic abscesses can exhibit transdiaphragmatic spread into the chest, pulmonary sarcomatoid carcinoma can also invade the abdomen. Biopsy should be performed during the evaluation and workup of the patient.

1. Introduction

Pulmonary sarcomatoid carcinoma is a very rare primary neoplasm of the lung with a usual aggressive clinical course [1]. Most patients present at an advanced stage and have metastatic disease at diagnosis [2]. Although these tumors can be locally invasive, direct extension into the abdomen has not previously been reported. We present a case of pulmonary sarcomatoid carcinoma with direct invasion into the dome of the liver. Our institution is a large, tertiary academic medical center in the middle of a large urban community. Our study has been reported in line with the SCARE criteria [3]. Written informed consent was obtained from the patient for publication and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

2. Case presentation

Our patient is an 82-year-old Caucasian female with a lifetime non-smoking history who presented to our institution with generalized fatigue, fever, night sweats, cough, and pleuritic chest pain. She had no significant comorbidities, was retired and lived with her partner. She had recently traveled to the western part of the United States. Additionally, she had recently undergone periodontal deep cleaning with no peri-procedural antibiotics. Laboratory testing was significant for a leukocytosis of 13.5 white blood cells per microliter and a viral panel negative for respiratory syncytial virus, influenza, and coronavirus disease 2019.

Computed tomography and magnetic resonance imaging revealed a large heterogeneous mass extending from the right pulmonary hilum through the diaphragm (Fig. 1). The lesion involved segments VII and VIII of the liver. There was a small pleural effusion and no evidence of

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distant metastases. The mass appeared to be distinct from the pericardium and there was no pleural effusion (Fig. 2).

Although initial radiology reports suggested hepatic abscess, there remained a high suspicion for neoplasm. As such, percutaneous fine needle aspiration was performed. Biopsy revealed pulmonary sarcomatoid carcinoma (Figs. 3 and 4). The mass demonstrated a high-grade, malignant spindle cell proliferation with occasional multinucleated giant cells and inter-lesional acute and chronic inflammation. Immunostains demonstrated the tumor cells to be diffusely positive for low molecular weight cytokeratin Cam 5.2.

The patient was discharged to home and seen as an outpatient. Positron-emission tomography revealed no additional disease. Surgical consult was obtained, but the decision was made to defer surgery given the transdiaphragmatic invasion. She was begun on systemic chemotherapy with a platinum-based regimen. On follow-up 3 weeks later, she was tolerating treatment without complication.

3. Discussion

Our case is the first reported case of a pulmonary sarcomatoid carcinoma with transdiaphragmatic invasion into the liver. This type of spread is more commonly seen with hepatic abscesses progressing superiorly into the thoracic cavity [4–5]. Although hepatic abscesses can exhibit transdiaphragmatic spread into the chest, pulmonary sarcomatoid carcinoma can also invade the abdomen. Clinical suspicion for neoplasm should warrant biopsy when technically possible. For our patient, there was some question among multiple clinical teams about whether antibiotics should be given for six weeks followed by interval re-imaging. After a multidisciplinary discussion, however, the decision was made to pursue biopsy immediately understanding that malignancy was a possibility. We recommend immediate biopsy for all suspicious lesions if technically possible.

Pulmonary sarcomatoid carcinoma generally has an aggressive behavior. Most tumors are larger than 3 cm when diagnosed and are most commonly isolated to one lobe of the lung, unlike our case. Some specific genetic mutations may worsen prognosis in these tumors [6]. Surgical resection is the mainstay of treatment when the tumor is resectable and there is no metastatic spread [7]. Perioperative management with chemotherapy and radiation treatment usually follow the same paradigm as other non-small cell lung cancers, but postoperative chemotherapy has been shown to have some efficacy in improving overall survival [8]. Overall prognosis is worse for pulmonary sarcomatoid carcinoma than for other non-small cell lung cancers, with an overall worse survival of 8 to 19 months [9].

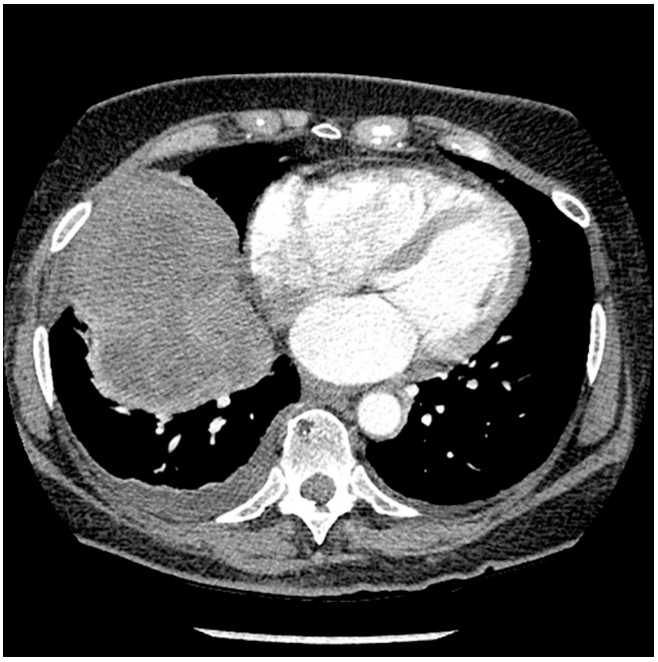

Fig. 2. Computed tomography imaging showing pulmonary sarcomatoid carcinoma abutting the diaphragm.

Our patient had a primary pulmonary sarcomatoid carcinoma, which is distinct from metastatic sarcoma from another primary location. The role of pulmonary metastasectomy for sarcoma has been well documented. In one large published series of 112 patients who underwent pulmonary metastasectomy for sarcoma, one-year survival rate was 43 percent [10]. In another large series of 803 patients undergoing pulmonary metastasectomy for sarcoma, the median disease-free survival was 6.8 months and median overall survival was 33.2 months [11]. The survival after pulmonary metastasectomy for sarcoma tends to be superior to survival after resection for primary pulmonary sarcomatoid carcinoma.

Our decision was not to operate on this patient given her age and transdiaphragmatic invasion of the liver. There has been a report,

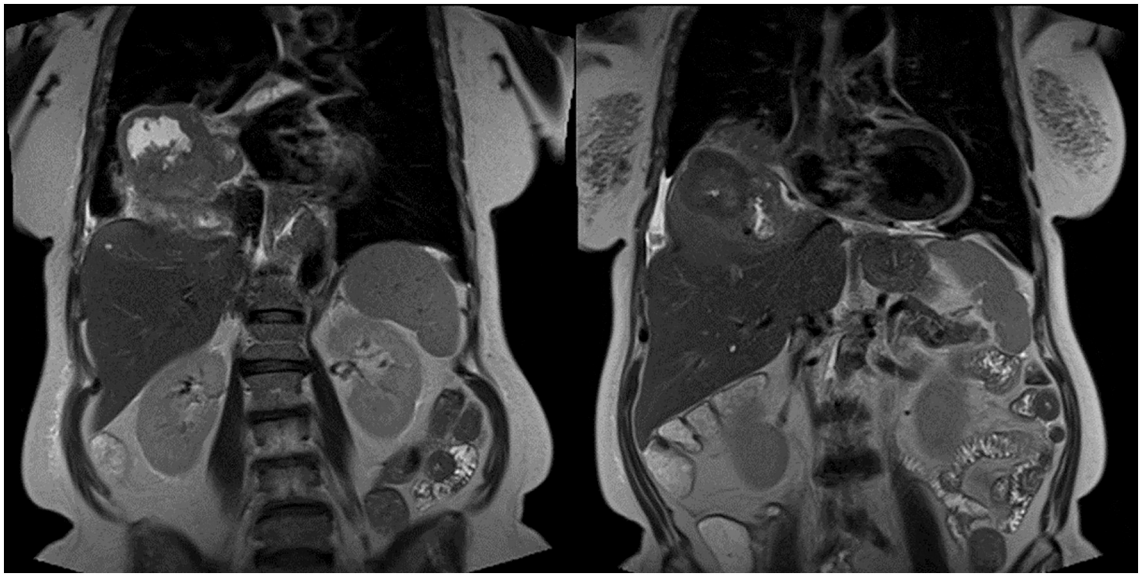

Fig. 1. Magnetic resonance imaging showing transdiaphragmatic invasion of the liver by pulmonary sarcomatoid carcinoma.

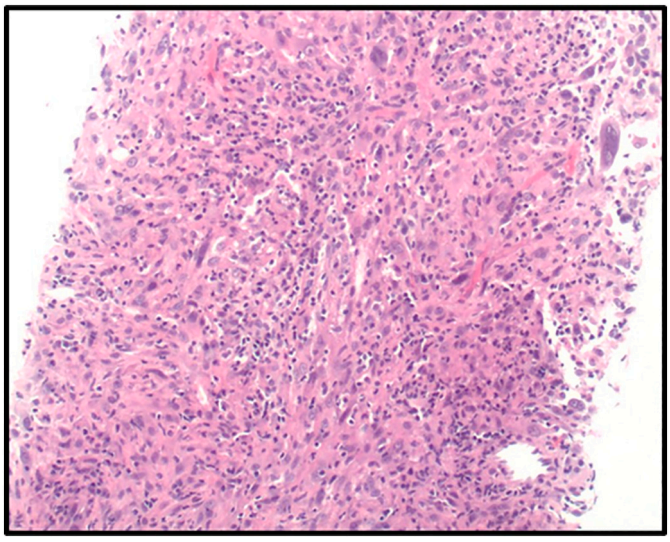

Fig. 3. Low-powered view of pulmonary sarcomatoid carcinoma.

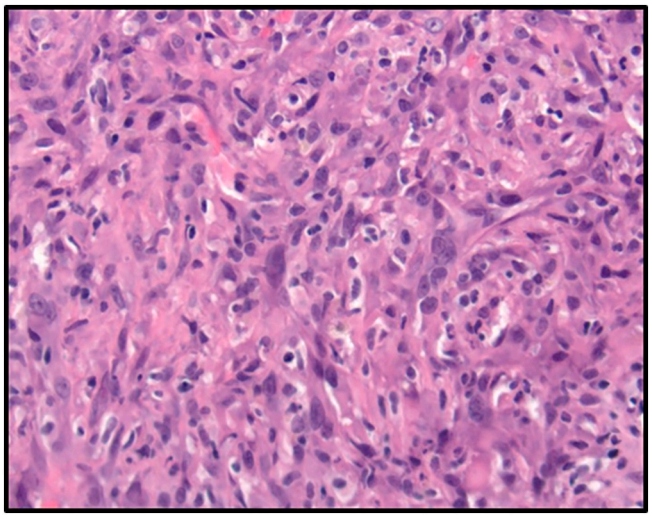

Fig. 4. High-powered view of pulmonary sarcomatoid carcinoma.

however, of en bloc liver resection along with lobectomy and diaphragmatic resection [12]. There were several factors that guided our decision not to operate. Although functional, the patient was an octogenarian. Secondly, the location of the invasion would have necessitated an extended hepatic resection. Thirdly, the histology of the tumor and typical aggressive course was considered. Given all these factors, we felt that surgical resection was not appropriate. There is significant possibility of local problems in the future, however. Complications such as hemothorax, ascites, hemoptysis and pleuritic pain are all potential risks. Close observation will be required to mitigate any potential complications early in their course.

There are some limitations to this case. Our case is a single report, so generalizations cannot be made. In addition, we do not have long-term information on the tumor's response to chemotherapy. Nevertheless, we felt that the clinical dilemma in diagnosing this tumor and the potential misdiagnosis of an abscess warrants report.

4. Conclusion

Pulmonary sarcomatoid carcinoma has an aggressive course compared to other non-small cell lung cancers. The diagnosis can be difficult to make, and there may be confusion with a non-malignant entity based on imaging appearance. Biopsy should be performed on initial presentation when technically possible. Our case is the first reported case of pulmonary sarcomatoid carcinoma to have transdiaphragmatic invasion into the liver. Although surgery was considered, multiple factors precluded resection. These tumors do display some responsiveness to chemotherapy, and adjuvant treatment after resection may improve overall survival.

Informed consent

Consent was obtained from the patient for this manuscript.

Ethical approval

Institutional Review Board approval was waived for this study given the nature as a case report. Patient consent was obtained prior to writing this case report.

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Author contribution

Conceptualization, Data Curation, Investigation, Validation, Writing – Original draft, Writing - Edited draft and Final Approval: HH, BT, JC and IO

Project Administration: IO

Guarantor

Ikenna Okereke, M.D.

Conflict of interest statement

There are no conflicts.

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