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Case report

Mediastinal angiosarcoma presenting as diffuse alveolar hemorrhage

Debapriya Datta, MD[a,*], Daniel A. Gerardi, MD[b], Bimalin Lahiri, MD[b]

[a] Division of Pulmonary & Critical Care Medicine, University of CT Health Center, Farmington, CT, USA
[b] Division of Pulmonary and Critical Care Medicine, St Francis Hospital, Hartford, CT, USA

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ABSTRACT

Angiosarcomas are malignant vascular tumors. Angiosarcomas arising in the thorax such as angiosarcoma of the lungs, heart and mediastinum are extremely rare. There are no reports of mediastinal angiosarcomas presenting with diffuse alveolar hemorrhage, which is a clinical syndrome characterized by the presence of hemoptysis, dyspnea, hypoxia, diffuse lung infiltrates and anemia. Usually, diffuse alveolar hemorrhage is caused by pulmonary capillaritis. Local invasion is more common with these tumors than distant metastasis. These tumors are very aggressive and have a poor response to treatment modalities including surgical resection, chemotherapy, and radiation. Consequently, they carry a poor prognosis. Due to the rarity of these tumors, no standard chemotherapy or radiation protocol exists. We report a case of diffuse alveolar hemorrhage caused by a previously unreported entity: angiosarcoma of the mediastinum.

1. Introduction

Angiosarcomas are malignant vascular tumors. Angiosarcomas arising in the thorax such as angiosarcoma of the lungs, heart and mediastinum are extremely rare [1]. Angiosarcoma of the lungs have been reported to present with diffuse alveolar hemorrhage (DAH), which is a clinical syndrome characterized by the presence of hemoptysis, dyspnea, hypoxia, diffuse lung infiltrates and anemia [2]. Commonly, DAH is caused by pulmonary capillaritis associated with conditions such as Polyangiitis with granulomatosis, Goodpasture's Syndrome, Henoch- Schonlein Purpura, Microscopic polyarteritis and Systemic lupus erythematosus [3]. However, not all cases of DAH are secondary to pulmonary capillaritis. Though pulmonary angiosarcomas have been reported to cause DAH [4–6], there are no reports in literature of mediastinal angiosarcomas presenting with DAH. We report a case of diffuse alveolar hemorrhage caused by an extremely rare entity: mediastinal angiosarcoma.

2. Case report

A 29-year-old male presented with a 2-month history of cough, intermittent hemoptysis and progressive exertional dyspnea. He denied orthopnea, chest pain, palpitations, fevers, night sweats, nasal stuffiness or congestion, sinus headaches; weight loss, anorexia, joint pains, skin rash, and urinary complaints. His past medical history was significant for childhood Nephrotic Syndrome, which had resolved with steroid therapy. He had a 5 pack-year history of smoking; denied risk factors for Human Immunodeficiency Virus (HIV) exposure, as well as occupational or recreational exposure to toxins.

On examination, patient was in no distress, with normal vital signs except for oxygen saturation of 90% on room air. The physical examination was normal except for pallor and rhonchi on lung auscultation. Chest x-ray (Fig. 1) showed patchy, bilateral infiltrates. Hemoglobin was 6.5 gm%, white blood count 10.7 and platelets 273. Peripheral smear revealed microcytic, hypochromic anemia. BUN, creatinine, coagulation profile, liver function test and urine analysis were normal. On bronchoscopy, diffuse oozing of blood from segmental bronchi was seen bilaterally. Initially, the patient was presumed to have a diffuse alveolar hemorrhage secondary to a pulmonary capillaritis. For further work-up, antinuclear antibody, anti-ribonucleoprotein antibody, antibasement membrane antibody, antineutrophil cytoplasmic antibody, antiphospholipid antibody, complement and cryoglobulin levels was obtained and were normal. HIV test was negative. Computerized tomogram (CT) scan of the chest with contrast (Fig. 2) revealed bilateral infiltrates, predominantly at the periphery. It also revealed a non-homogeneous mass in the anterior mediastinum (Fig. 3). A CT-guided biopsy of the mediastinal mass was inconclusive. Thoracoscopic biopsy of the mediastinal mass (Fig. 4) was consistent with angiosarcoma.

As there was no evidence of local or distant spread, surgical resection was attempted. A large, friable tumor was seen, adherent to superior vena cava and right atrium, which was unresectable. Post-operatively, the patient did poorly and. per his family's wishes, comfort care was instituted and the patient expired. Autopsy revealed a large,

* Corresponding author. Division of Pulmonary- Critical Care Medicine, University of CT Health Center, 263 Farmington Avenue, Farmington, CT 06030, USA.
E-mail address: ddatta@uchc.edu (D. Datta).

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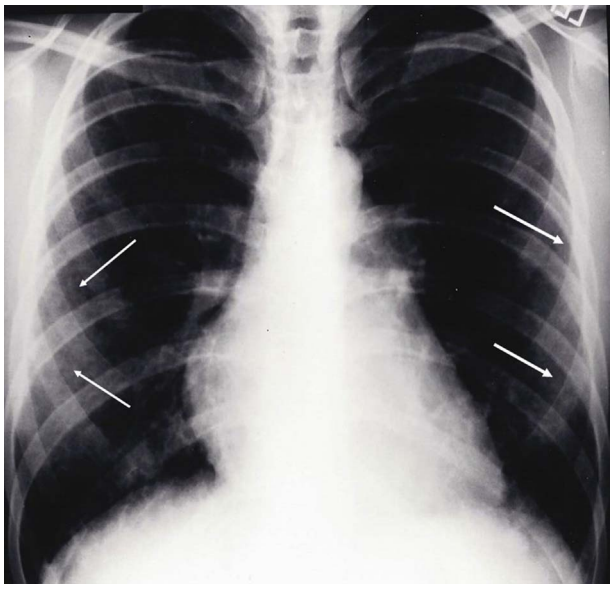

Fig. 1. Chest x-ray showing bilateral infiltrates, in the mid and lower lung zones (arrows).

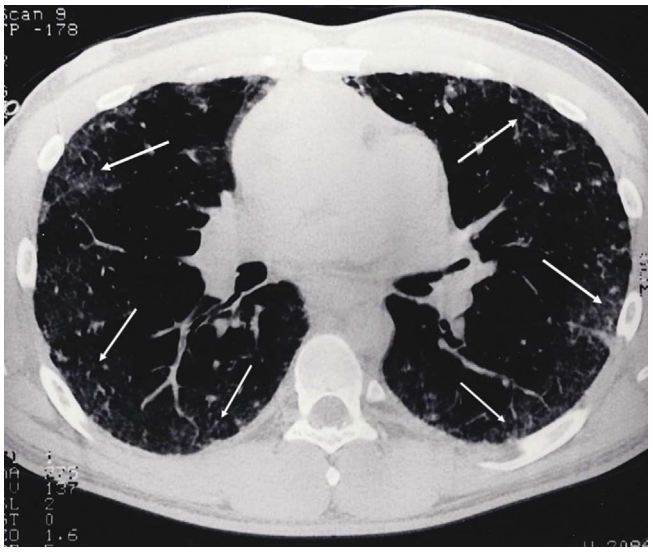

Fig. 2. CT chest showing peripheral interstitial infiltrates, with patchy areas of ground glass and reticular opacities (arrows).

hemorrhagic tumor mass arising in the anterior mediastinum, and involving the heart, great vessels, both lungs and diaphragm. CD31 immunostaining was strongly reactive. The autopsy confirmed the diagnosis of primary angiosarcoma arising in the mediastinum with metastatic involvement of lung. The likely cause of alveolar hemorrhage in this case was alveolar metastases with probable back-pressure effect of mediastinal tumor causing obstruction to great vessels.

3. Discussion

Angiosarcomas are malignant vascular tumors arising from the endothelium. They constitute one of the rare forms of soft tissue neoplasm, comprising less than 1% of all sarcomas [1]. They may occur in any location in the body, but arise more commonly from the skin and superficial connective tissue. A review of over 300 cases of angiosarcoma over a 10-year period revealed that 1/3rd rose from the skin, 1/4th rose from soft tissue, while the rest originated in various organs such as liver, spleen, breast, bone, heart [1]. Mediastinum and lungs constitute extremely rare sites of origin [1,7].

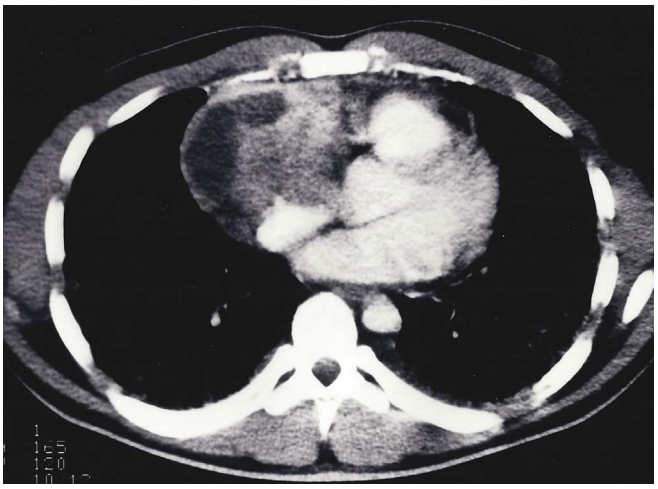

Fig. 3. CT chest with contrast showing a non-homogeneous mass in the anterior mediastinum, abutting the heart.

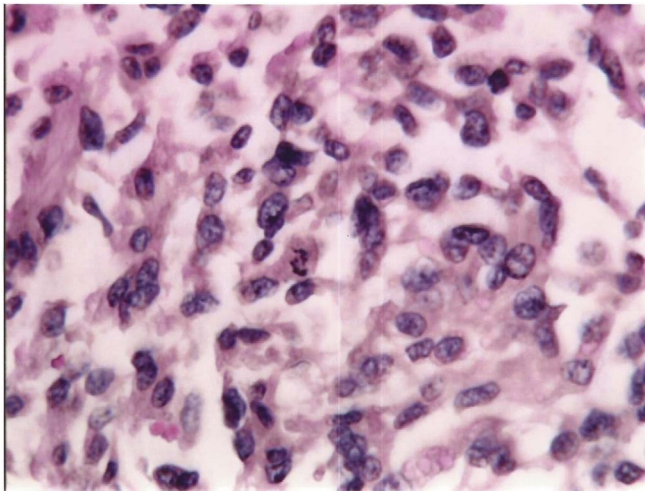

Fig. 4. Photomicrograph of biopsy of tumor showing slit like spaces lined by atypical, pleomorphic endothelial cells, characteristic of angiosarcoma. (Hematoxylin-eosin stain; original magnification × 100).

These tumors can affect all ages [7]. Ages in reported cases ranged from 5 to 97 years [6,7]. They occur more commonly in men, except angiosarcomas of the breast, which is more common in women [1]. Certain conditions have been found to be associated with increased incidence of these tumors [1,7]. Environmental carcinogens such as vinyl chloride have been implicated in the pathogenesis of angiosarcoma of the liver and may possibly be involved in the pathogenesis of other angiosarcomas as well.

Clinical presentation depends on the site of origin of these tumors[1,7]. From their involvement of adjoining structures, they may result in symptoms and signs that obscure the underlying diagnosis. Mediastinal angiosarcomas constitute less than 1% of all mediastinal tumors. Wychulis [8], in a review of 1046 cases of mediastinal tumors over a 40-year period, found only 7 cases. A review of literature by Pachter [9] revealed 8 cases. Most of these tumors occur in the anterior mediastinum. Precordial pain is the usual presenting symptom. Though angiosarcomas arising in the lung have been reported to cause diffuse alveolar hemorrhage, it has not been reported with mediastinal angiosarcomas.

On imaging studies, these tumors appear as a mediastinal mass. A tissue biopsy is required for diagnosis. This tumor is characterized by local invasion rather than distant metastases.

Angiosarcomas are well-differentiated and can mimic carcinomas or

benign tumors. Immuno-cytochemical studies such as, staining for Factor VIII-Related Protein, CD31, Vimentin and Intermediate Filament, are positive in angiosarcomas, and can make the pathological distinction easier [1]. CD31, a platelet-endothelial cell adhesion molecule, is a highly sensitive and specific marker for endothelial differentiation and is helpful in diagnosing angiosarcomas [1].

These tumors are very aggressive, with death occurring within a few months of presentation [4–7,9]. Average survival ranges from 1 to 3 months. No successful treatment modality exists for this tumor. No established protocol for chemotherapy or radiotherapy exists because of rarity of this tumor. With localized disease, surgery has been tried, without a good outcome, in most cases. Chemotherapy or radiation, when attempted, has not been effective. With surgery and chemotherapy, the survival was reported in one series to be 17% [10]. Old age and large tumor size are unfavorable prognostic factors [7]. Tumor size less than 5 cm in diameter and tumors with a lymphoid infiltrate has been reported to be associated with a better prognosis [10].

4. Conclusion

Angiosarcomas are aggressive tumors with poor prognosis. This is, to our knowledge, the first case of mediastinal angiosarcoma reported to cause DAH. Though rare, mediastinal angiosarcoma should be considered in the differential diagnosis of patients who present with DAH.

Conflict of interest

The authors have no conflict of interest.

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References

[1] S.W. Weiss, J.R. Goldblum, Malignant vascular tumors, Enzinger and Weiss's Soft Tissue Tumors, fourth ed., Mosby, St Louis, 2001, pp. 917–954.
[2] J.W. Leatherman, S.F. Davis, J.R. Hoidat, Alveolar hemorrhage syndrome, Medicine 63 (1984) 343–361.
[3] R.J. Green, S.J. Ruoss, S.A. Kraft, et al., Pulmonary capillaritis and alveolar hemorrhage, Chest 110 (1996) 1305–1316.
[4] R.G. Spragg, P.L. Wolf, P. Haghighi, et al., Angiosarcoma of the lung with fatal pulmonary hemorrhage, Am. J. Med. 74 (1983) 1072–1076.
[5] S.A. Yousem, Angiosarcoma presenting in the lung, Arch. Pathol. Lab Med. 110 (1986) 112–115.
[6] D.H.B. Palvio, S.M. Paulsen, E.W. Henneberg, Primary Angiosarcoma of the lung presenting as intractable hemorrhage, Thorac. Cardiovasc. Surg. 35 (1987) 105–107.
[7] J.M. Meis-Kindblom, L.G. Kindblom, Angiosarcoma of soft tissue- a study of 80 cases, Am. J. Surg. Pathol. 22 (1998) 683–697.
[8] A.R. Wychulis, W. Payne, O.T. Clagett, et al., Surgical treatment of mesenchymal tumors, J. Thorac. Cardiovasc. Surg. 62 (1971) 379–392.
[9] M.R. Pachter, R. Lattes, Mesenchymal tumors of the mediastinum, Cancer 16 (1963) 95–107.
[10] R.J. Mark, J.C. Poen, L.M. Tran, et al., Angiosarcoma: a report of 67 patients and a review of the literature, Cancer 77 (1996) 2400–2406.