Pleural Epithelioid Hemangioendothelioma: Clinical Course and Response to Treatment

Epithelioid hemangioendothelioma (EHE) is a rare vascular tumor originating from the vascular endothelial or pre-endothelial cells.[1] The estimated prevalence of EHE is less than 1 per one million population.[2] It can arise from various organs, but most commonly involves the liver (81%), lungs (57%), and bones (12%).[3] Pleural epithelioid hemangioendothelioma (PEH) is extremely rare,[4] and follows an aggressive disease course with high mortality within few months.[5,6] Here, we present a case of a patient diagnosed with PEH who responded well to the treatment.

A 65-year-old female presented with a 4-week history of right-sided chest pain. The pain was described as pleuritic in nature and was associated with dry cough and shortness of breath while lying flat and on exertion. On physical examination, the patient was pale, tachypneic, and tachycardic. Her pulse rate was 118 beats/minute and pulse oximetry was 95% on 2-liter oxygen. The respiratory assessment revealed dull percussion, decreased breath sounds, and bilateral infra-scapular crepitations over the right hemithorax. The reminder of systemic examination was unremarkable. Laboratory findings showed leukocytosis, neutrophilia, anemia, and elevated C-reactive protein. Chest radiograph revealed obliteration of right costophrenic angle. A right-sided thoracentesis was performed and it yielded a bloody fluid. Pleural fluid analysis yielded hematocrit of 24.4% concurrently with peripheral blood hematocrit of 28.6%, consistent with a hemothorax. Pleural fluid cytology revealed an inflammatory smear and was negative for malignant cells.

The contrast-enhanced computed tomography (CT) scan of the chest, abdomen, and pelvis revealed a large lobulated heterogenous density mass lesion in the right lung extending from the hilar region to the pleural surface, predominantly involving the middle lobe. Multiple predominantly pleural-based soft tissue density nodules with surrounding ground-glass density of varying sizes were noted in the bilateral lung fields and a bilateral mild pleural effusion that was more on the right side. In addition, the scan showed a large partially calcified mass lesion in the right lobe of the thyroid and a large right adrenal lesion.

She underwent a CT-guided right lung biopsy and it revealed hemorrhagic infract with active fibrotic hemorrhagic lung tissue, following which we proceeded with video-assisted thoracoscopic surgery. Histologically, tissue sections from the right lung, right pleura, and right pleural lesions showed malignant proliferation of epithelioid and polygonal-like cells [Figure 1]. The cells showed nuclear pleomorphism with anisonucleosis, vacuolated cytoplasm, and occasional mitosis (<1/10 HPF).

Immunohistochemically, the tumor cells were positive for CD34, CD31 [Figure 2], and WT1 (cytoplasmic). Ki-67 was around 50%. Pan-cytokeratin showed focal positivity, while for calretinin, Ck5/6, Napsin A, P40, P63, TTF 1, and ERG, the findings were negative. Based on these findings, a diagnosis of PEH was made (intermediate grade malignancy). Ultrasound-guided fine-needle aspiration cytology of right thyroid nodule revealed polygonal and epithelioid tumor cells with enlarged pale vesicular nuclei and nuclear indentation, and cells having tailing and vacuolated cytoplasm with few spindle cells. These findings were suggestive of a malignant EHE.

The diagnosis of PEH was made on the basis of histopathological findings and was confirmed by the positive immunohistochemistry staining. The patient was commenced on chemotherapy with paclitaxel 80 mg/m^2 weekly for 6 weeks and the cycle was repeated every 8 weeks, for a total of eight cycles. The patient responded to treatment and remained well during the oncological follow-up visits.

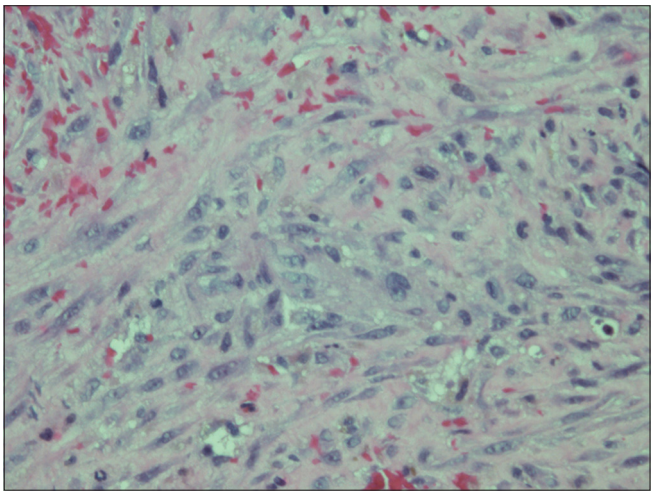

Figure 1: Photomicrograph showing polygonal and spindle shaped malignant cells forming incipient vascular channels. (H and E, ×400)

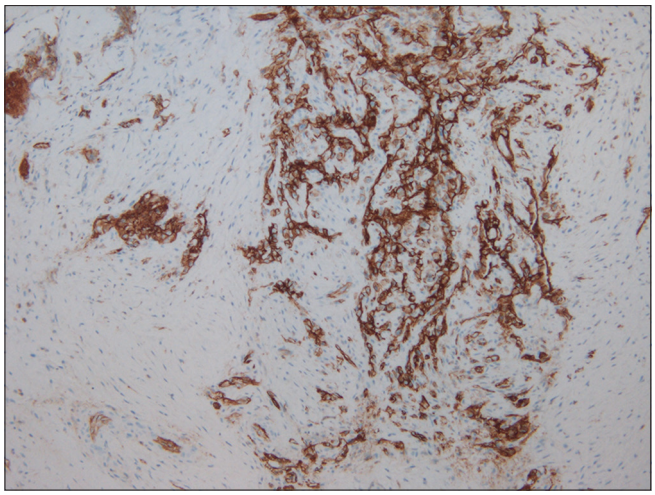

Figure 2: Photomicrograph showing CD 31 positive tumor cells forming vascular channels. (CD 31 × 200)

EHE presents according to the organs involved. It commonly affects lungs, liver, bone, and skin, and causes respective related symptoms. In case of pleural EHE, symptoms vary but commonly include dyspnea, chest pain, cough, fever and, in rare, advanced cases, hemoptysis.[4] Clinical findings coincide with pleural effusions, pleural thickening, pleural nodules, and parenchymal tumor. Other non-specific findings such as ascites, pericardial effusions, and hilar and mediastinal lymph node involvement suggest metastasis and are associated with unfavorable prognosis.[4] Immunohistochemistry is not only the gold standard for diagnosis but is also useful in identifying the origin of the tumor cells through endothelial cell markers. Commonly used markers include CD31 and CD34. On the other hand, FLI-1 protein has higher sensitivity and specificity in identifying blood vessel-derived tumors.[4] As with our patient, she presented with pleuritic pain which is a dominant feature of pleural PHE. Moreover, her clinical presentation included right-sided lung mass, pleural nodules, bilateral hemorrhagic pleural effusions and lesions in the right thyroid lobe and right adrenal gland. The patient responded well to paclitaxel and returned to baseline activity.

Declaration of patient consent

The authors certify that they have obtained all appropriate consent forms from the patient. The patient has given her consent for her images and other clinical information to be reported in the Journal. The patient understands that her name and initials will not be published, and due efforts will be made to conceal the identity.

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Conflicts of interest

There are no conflicts of interest.

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