IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 20, Issue 2 Ser.3 (February. 2021), PP 10-13
www.iosrjournals.org

Pulmonary Epithelioid Hemangioendothelioma- Rare Case Report ina 39 Year Old Female

Dr. Muhammed Jaseem, Dr. Shana Alungal, Dr. C.P Rauf, Dr. Nasser Yusuf, Dr. Sangeetha
Department of Pulmonary Medicine, Department of Cardiothoracic Surgery
Chest Hospital, Calicut, Kerala, India
Corresponding author: Dr. Muhammed Jaseem

Abstract: *We are reporting a case of pulmonary epithelioid hemangioenthothelioma (PEH) diagnosed in 39 year old female patient, presented with dyspnoea on exertion and CT chest showed bilateral pleural effusion. The pathological diagnosis was made on a pleural biopsy.*

Key Words *Epithelioid hemangioenthothelioma, Immunohistochemistry, Chemotherapy, Tumour markers*

Date of Submission: 25-01-2021 Date of Acceptance: 10-02-2021

I. Introduction

Pulmonary epithelioid hemangioenthothelioma is one of the rare vascular tumour arising from vascular endothelial or pre-endothelial cells and it has epithelioid and histiocytoid appearance. It is usually occurring in middle aged adults with slight female preponderance. At the time on onset, patient usually has non-specific presentation ranges from asymptomatic to dyspnoea on exertion, cough, weight loss. Chest imaging usually shows multiple and bilateral pulmonary lesions and some may even present with bilateral pleural effusion as in our case. The definitive diagnosis is made by lung biopsy. The treatment protocol varies depending upon the site and number of lesions. Surgical resection is curative in case of solitary lesion whereas multifocal disease are treated with observation, chemotherapy.

II. Case Report

A 39 year old female patient who is a lifelong non-smoker, with no past history of pulmonary disease, presented to us with exertional dyspnoea of grade II for 4 months and progressed to grade III for past 1 month. She had no significant occupational exposure. She has history of anxiety disorder and she is on treatment for the same. On examination, her vital status were stable and oxygen saturation was 98% in room air. General examination was normal. On pulmonary examination, dullness to percussion noted in right infra scapular area and infra axillary area. On auscultation, breath sound was decreased in right infra scapular area and infra axillary area.

She was investigated further. Chest X-ray showed pleural effusion on the right side. CT thorax showed bilateral moderate pleural effusion with collapse and consolidation of entire right lower lobe and basal segment of left lower lobe.

She was then posted for Thoracoscopy. Thoracoscopy was done under short general anaesthesia. The trocar inserted in the right 5^{th} intercostal space in the mid axillary line and aspirated around 2L of haemorrhagic fluid. Right middle and lower lobe collapsed. Costal pleura was covered with patches and nodules and diaphragmatic pleura covered with nodules (figure 1,2). Pleural fluid sent for AFB and bacterial culture and which came out as negative. The pleural tissue was taken (figure 3) and sent for histopathological examination. The pathology report came as Malignant epithelioid hemangioenthothelioma. The immunohistochemistry showed positivity for CD 31 (figure 4) and focally positive for CD 34 (figure 5) and WT1, CK, EMA and Calretenin were negative. She was treated with antibiotics and supportive measure following procedure and she was stable clinically as well as symptomatically following procedure.

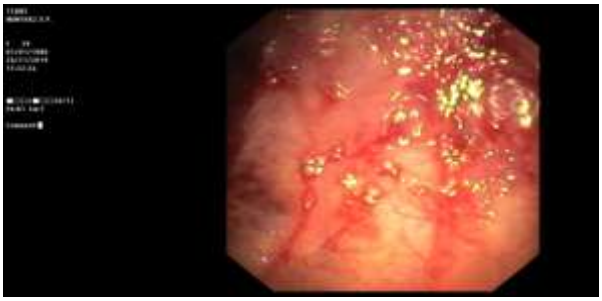

Figure 1

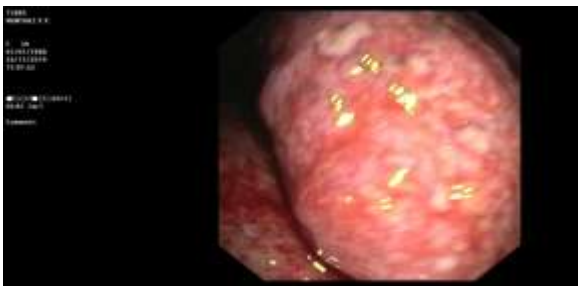

Figure 2

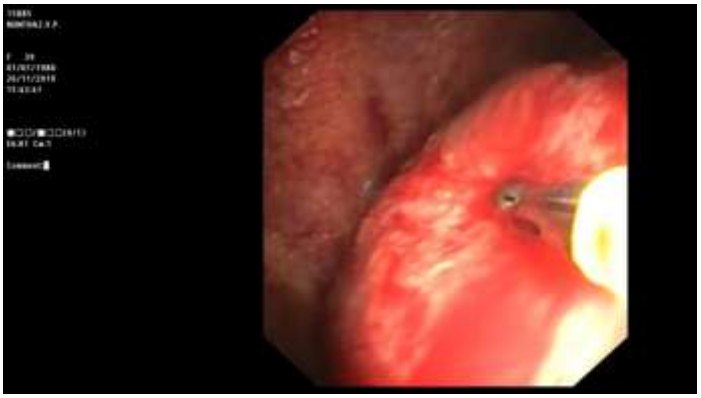

Figure 3

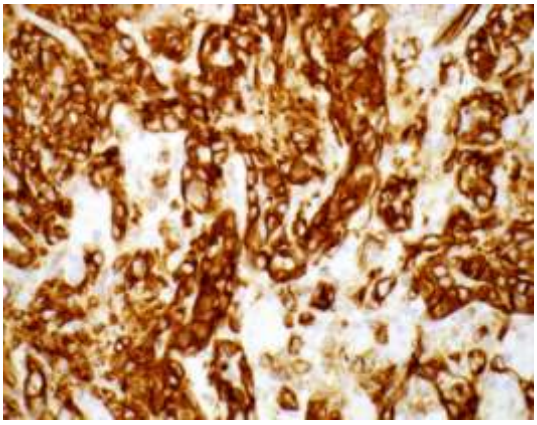

Figure 4

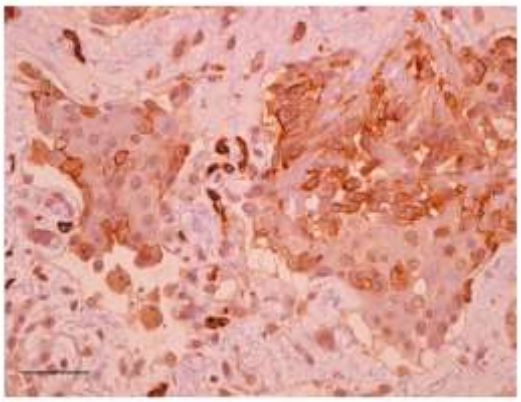

Figure 5

5 days following Thoracoscopy, patient was posted for Fibre-optic bronchoscopy (FOB). FOB done under local anaesthesia and showed mass lesion in bronchus intermedius completely occluding to lumen and there was bleeding on touch. She was then discharged 2 days following FOB. She was then re admitted following 10 days for Rigid bronchoscopy. Rigid bronchoscopy done under general anaesthesia. Rigid bronchoscope inserted initially and flexible bronchoscope passed through rigid scope, fogatry catheter placed near the opening of bronchus intermedius. Biopsy was taken from narrowed and irregular opening to bronchus intermedius. Haemostasis was achieved by fogatry balloon inflation, cold saline adrenaline and surgical haemostasis. Post procedure, she was treated with O2 inhalation, antibiotics and nebulization. Biopsy report came as chronic inflammation.

III. Discussion

Pulmonary epithelioid hemangioenthothelioma is one the rare vascular tumour of endothelial origin. It mostly affects middle aged adults between 30-50 years with female preponderance. This tumour is rare in children. It is sporadic in occurrence. Th usual site of involvement includes visceral organs such as lungs, liver and also occurs in bone and soft tissue. It was first described by Dail and Leibow [1] in 1975. The term epithelioid hemangioenthothelioma was first coined by Weiss and Enzinger [2] in 1982. The estimated prevalence of EHE is less than one in 1 million [3].

Epithelioid hemangioenthothelioma is Rare malignant vascular neoplasm composed of epithelioid endothelial cells in a background of myxohyaline stroma and it usually occurs as multifocal disease and sometimes mistaken as metastatic disease. Majority of cases have presence of WWTR1-CAMTA1 gene fusion [4]. WWTR1 on chromosome 3q25 and CAMTA1 on chromosome 1p36.23. Some tumour subset shows YAP1-TEF3 fusion[5].

Clinical feature of Pulmonary epithelioid hemangioenthothelioma are variable. It ranges from asymptomatic state to dyspnoea on exertion, cough, weight loss. CT scan of the chest usually shows multiple nodules in the lungs or pleura, calcification can be seen within nodules. If there is pleural invasion, pleural thickening and effusion can be seen, as in this patient.

Definitive diagnosis is made by biopsy. Gross appearance, size range from subcentimeter nodules to large and coalescing mass. On cytological [6] analysis, Round to polygonal plasmacytoid cells with minimal pleomorphism and few mitoses, Frequent nuclear grooves and psuedoinclusions, Dense cytoplasm with occasional intra cytoplasmic lumina, Hyaline stroma can be seen.

Immunohistochemistry also helps in diagnosis and shows positivity for vascular markers including CD 31 and CD 34, Keratin markers including CK 8 and CK 18. In case of WWTR1-CAMTA1 gene fusion tumours, there will be positivity for CAMTA1. YAP1-TEF3 fusion tumours shows positivity for nuclear expression of TEF3.

Prognosis of PEH is variable and the 5 year survival rate ranges from 47-71%. Mainly two types of presentation are seen in PEH. Asymptomatic presentation with solitary pulmonary nodules and they have better prognosis. Symptomatic patients with bilateral pulmonary nodules or pleural effusion has bad prognosis. The poor prognostic factors includes male gender, presence of multiple nodules, pleural effusion and haemoptysis.

Treatment options of PEH are variable and depends on the extend of involvement. Single pulmonary nodules and unilateral multiple nodules can be managed surgically [7]. In case of multiple or extensive lesions, various chemotherapies are used with variable effect. It includes monoclonal antibody against VEGF-A such as Bevacizumab [8,9]. Interferon (IFN) 2αtherapy can also be used because of its antiangiogenic property [10]. In some cases, the neoplastic cells expresses oestrogen and progesterone receptors and in that case hormonal therapy with anti-progesterone and oestrogen can be tried [11]. Some neoplastic cells may also expresses glucocorticoid receptors and 11β-hydroxysteroid dehydrogenase enzyme and in such case, steroid modulators can be used [12]. Radiation therapy has proven to be ineffective because of tumour's slow growth and radiobiological characteristics.

Summary of some of the studies on PEH are given in the below table.

Author/Reference	No.	Gender M/F	Age at detection	Pulmonary nodules	Therapy	Metastatic spread	Survival years	Clinical presentation
Amin[13]	93	25/68	40.1	Multiple bilateral or unilateral	Surgery CHT None	Liver Pleural Lymph node metastases Bone	5-year survival curves 30-90%	No symptoms 49.5% Dyspnea 18.3% Cough 18.3% Chest pain 16% Haemoptysis 6.5% Weight loss 6.5% Others 9.7%
Bagan[14]	80	31/49	39.7	Multiple bilateral,unilateral	Surgery Surgery+CHT Radiation None	Liver Bone Brain Bowel	5-year survival 60% (47-71%)	Incidental 48.7% Respiratory symptoms 42.5% Haemoptysis 11.2% Weight loss 6.2% Abdominal symptoms 2.5% Anaemia
Rock[15]	1	0/1	7	Bilateral	Not stated	Liver	Not stated	Pleural thickening
Einsfelder[16]	11	4/7	49.8	Multiple bilateral	Surgery CHT Interferon-2a None	Liver Pleural Bone Meningeal Peritoneum	6-105 months	Not stated
Schattenberg[17]	3	1/2	47.3	Multiple bilateral	Surgery CHT (ifosfamide+ adriamycin) Radiation None	Liver (1/3)	24 months (suicide) 36 months (alive) 16 months (alive)	Chronic thoracic pain 3/3 Sickling sensations of the left arm 1/3

Table 1

IV. Differential Diagnosis

Pulmonary disease with multiple nodules are the differential diagnosis. It includes

1- Lung metastases
2- Granulomatous disease
3- Malignant mesothelioma
4- Pneumocytoma
5- Pulmonary AV malformations

V. Conclusion

Pulmonary epithelioid hemangioenthothelioma is a rare vascular tumour affecting middle aged adults with slightly increased prevalence in females. Clinical symptoms varies from patients to patients. Biopsy is the gold standard for diagnosis and immunohistochemistry also helps in diagnosis. Solitary and unilateral lesions can be managed surgically with good prognosis and multiple lesions has poor prognosis and are managed by chemotherapy and other modalities.

References

[1]. Dail DH, Liebow AA. Intravascular bronchioloalveolar tumor. Am J Pathol 1975;78:6a-7a.
[2]. Weiss SW, Ishak KG, Enzinger FM, et al. Epithelioid hemangioendothelioma and related lesions. Semin Diagn Pathol 1986;3:259-87.
[3]. Lau K, Massad M, Weinberg G, et al. Clinical patterns and outcome in epithelioid hemangioendothelioma with or without pulmonary involvement. Chest 2011;140:1312-8.
[4]. WWTR1-CAMTA1 gene fusion is a consistent abnormality in epithelioid hemangioendothelioma of different anatomic sites. Genes Chromosomes Cancer. 2011 Aug;50(8):644-53. doi: 10.1002/gcc.20886. Epub 2011 May 16. PMID: 21584898; PMCID: PMC3264678.
[5]. Antonescu CR, Le Loarer F, Mosquera JM, Sboner A, Zhang L, Chen CL, Chen HW, Pathan N, Krausz T, Dickson BC, Weinreb I, Rubin MA, Hameed M, Fletcher CD. Novel YAP1-TFE3 fusion defines a distinct subset of epithelioid hemangioendothelioma. Genes Chromosomes Cancer. 2013 Aug;52(8):775-84. doi: 10.1002/gcc.22073. Epub 2013 Jun 5. PMID: 23737213; PMCID: PMC4089994.
[6]. Murali R, Zarka MA, Ocal IT, Tazelaar HD. Cytologic features of epithelioid hemangioendothelioma. Am J Clin Pathol. 2011 Nov;136(5):739-46. doi: 10.1309/AJCP5NK0FJCGHTFM. PMID: 22031312.
[7]. P. Bagan, M. Hassan, F. L. P. Barthes et al., "Prognostic factors and surgical indications of pulmonary epithelioid hemangioendothelioma: a review of the literature," Annals of Thoracic Surgery, vol. 82, no. 6, pp. 2010–2013, 2006.
[8]. L. Belmont, L. Zemoura, and L. J. Couderc, "Pulmonary epithelioid haemangioendothelioma and bevacizumab," Journal of Thoracic Oncology, vol. 3, no. 5, pp. 557–558, 2008.
[9]. Y. H. Kim, M. Mishima, and A. Miyagawa-Hayashino, "Treatment of pulmonary epithelioid hemangioendothelioma with bevacizumab," Journal of Thoracic Oncology, vol. 5, no. 7, pp. 1107–1108, 2010.
[10]. E. Radzikowska, E. Szczepulska-Wójcik, M. Chabowski, K. Oniszh, R. Langfort, and K. Roszkowski, "Pulmonary epithelioid haemangioendothelioma—interferon 2-alpha treatment—case report," PneumonologiaiAlergologiaPolska, vol. 76, no. 4, pp. 281–285, 2008.
[11]. N. P. Ohori, S. A. Yousem, E. Sonmez-Alpan, and T. V. Colby, "Estrogen and progesterone receptors in lymphangioleiomyomatosis, epithelioid hemangioendothelioma, and sclerosing hemangioma of the lung," American Journal of Clinical Pathology, vol. 96, no. 4, pp. 529–535, 1991.
[12]. Y. Kumazawa, K. Maeda, M. Ito et al., "Expression of glucocorticoid receptor and 11β hydroxysteroid dehydrogenase in a case of pulmonary epithelioid haemangioendothelioma," Molecular Pathology, vol. 55, no. 1, pp. 61–64, 2002.
[13]. Amin RM, Hiroshima K, Kokubo T, et al. Risk factors and independent predictors of survival in patients with pulmonary epithelioid hemangioendothelioma. Review of the literature and a case report. Respirology 2006;11:818-25.
[14]. Bagan P, Hassan M, Riquet M, et al. Prognostic factors and surgical indications of pulmonary epithelioid hemangioendothelioma: a review of the literature. Ann ThoracSurg 2006;82:2010-3.
[15]. Rock MJ, Kaufman RA, Moss ML, et al. Epithelioid hemangioendothelioma of the lung (intravascular bronchioloalveolar tumor) in a young girl. PediatrPulmonol 1991;11:181-6.
[16]. Einsfelder B, Kuhnen C. Epithelioid hemangioendothelioma of the lung (IVBAT) - clinicopathological and immunohistochemical analysis of 11 cases (in German). Pathologe 2006;27:106-15.
[17]. Schattenberg T, Kam R, Pfannschmidt J, et al. Pulmonary epithelioid hemangioendothelioma: report of three cases. Surg Today 2008;38:844-9.

Dr. Muhammed Jaseem, et. al. "Pulmonary Epithelioid Hemangioendothelioma- Rare Case Report in a 39 Year Old Female."*IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 20(02), 2021, pp. 10-13.