Pleural Epithelioid Hemangioendothelioma mimicking pleural empyema

A case report

Fjaellegaard, Katrine; Petersen, Jesper Koefod; Stamp, Inger Merete; Høegholm, Asbjørn; Clementsen, Paul Frost; Bodtger, Uffe

Published in:
Respiratory Medicine Case Reports

DOI:
10.1016/j.rmcr.2020.101194

Publication date:
2020

Document version
Final published version

Document license
CC BY-NC-ND

Citation for published version (APA):
Fjaellegaard, K., Petersen, J. K., Stamp, I. M., Høegholm, A., Clementsen, P. F., & Bodtger, U. (2020). Pleural Epithelioid Hemangioendothelioma mimicking pleural empyema: A case report. Respiratory Medicine Case Reports, 31, [101194]. https://doi.org/10.1016/j.rmcr.2020.101194

Terms of use
This work is brought to you by the University of Southern Denmark through the SDU Research Portal. Unless otherwise specified it has been shared according to the terms for self-archiving. If no other license is stated, these terms apply:

• You may download this work for personal use only.
• You may not further distribute the material or use it for any profit-making activity or commercial gain
• You may freely distribute the URL identifying this open access version

If you believe that this document breaches copyright please contact us providing details and we will investigate your claim. Please direct all enquiries to puresupport@bib.sdu.dk
Case report

Pleural epithelioid hemangioendothelioma mimicking pleural empyema: A case report

Katrine Fjaellegaard a,b,c,*, Jesper Koefod Petersen a,b,c, Inger Merete Stamp d, Asbjorn Hoegholm b, Paul Frost Clementsen b,c,f, Uffe Bodtger a,b,c

a Department of Respiratory Medicine, Zealand University Hospital Naestved, Naestved, Denmark
b Department of Internal Medicine, Zealand University Hospital Roskilde, Roskilde, Denmark
c Institute of Regional Health Research, University of Southern Denmark, Odense, Denmark
d Department of Pathology, Zealand University Hospital Naestved, Naestved, Denmark
e Copenhagen Academy for Medical Education and Simulation (CAMES), Righospitalet, University of Copenhagen and the Capital Region of Denmark, Copenhagen, Denmark
f Institute of Clinical Medicine, University of Copenhagen, Copenhagen, Denmark

A R T I C L E   I N F O

Keywords:
Pleural disease
Pleura infection
Pleural tumor
Malignancy
Pleural effusion

A B S T R A C T

Malignant pleural effusion is an important and difficult differential diagnosis to pleural empyema. Epithelioid hemangioendothelioma is an uncommon vascular tumor, which typically occurs in liver, lung or bone. We present an extremely rare case of primary pleural epithelioid hemangioendothelioma mimicking pleural empyema. We conclude, that pleural epithelioid hemangioendothelioma should be kept in mind as a differential diagnosis in patients suspected of empyema.

1. Introduction

Pleural empyema is a frequent clinical condition with an annual incidence of 10–12 per 100,000 inhabitants[1]. The mortality is approximately 10% [1]. Malignant pleural effusion (MPE) has an incidence of ~70 per 100,000 [1] mostly due to pleural dissemination from extrapleural malignancy, and can present as pleural empyema due to early translocation of bacteria via the damaged pleural lining.

We describe a case of primary pleural malignancy presenting as pleural empyema.

2. Case report

A 71-year-old man, presented with dyspnea, cough and no effect of oral antibiotics. He was a current smoker with 80 pack-years, stable COPD and metabolic syndrome, and no known exposure to asbestos. Four years earlier, he had been diagnosed with a right-sided, hemorrhagic, exudative pleural effusion presumably caused by a thoracic trauma. The effusion was found to be culture negative and contained no malignant cells. Low-dose chest computed tomography (CT)-scan four weeks later showed complete remission of the pleural effusion.

At the current admission, chest x-ray showed moderate left sided pleural effusion and blood tests showed elevated leukocyte count (14.7×10^9/L) and C-reactive protein (CRP) level (170mg/L). The effusion was drained, revealing hemorrhagic pleural fluid. Pleural empyema was suspected, and the patient was treated with intravenous antibiotics followed by clinical improvement, but no effect on CRP level. Repeated pleural fluid analysis showed exudative effusion (pleural fluid LDH/plasma LDH-ratio >0.60, normal leukocyte differential count, no malignant cells (analysed twice, 28mL and 40mL respectively) and no bacterial growth (cultured four times). Throat swab for mycoplasma pneumonia, Chlamydia pneumonia, Chlamydia psittaci, Respiratory Syncytial virus, Influenza A and B and Covid-19 and investigations for Legionella and pneumococcus antigen in the urine were all negative. Chest ultrasound confirmed a septated left-sided pleural fluid. Treatment with intrapleural fibrinolytics was started via a 14 Fr drain.

Contrast enhanced CT showed left-sided pleural thickening without contrast-enhancement, moderate left-sided loculated pleural effusion, an enlarged 12mm mediastinal lymph node at station 8 and an osteolytic process in Th10 (shown in Fig. 1). Magnetic Resonance Imaging (MRI) of the spine revealed multiple lesions compatible with metastases without spinal cord affection. A Fluorine-18-labeled fluoroexyglucose (18F-F-
FDG-positron emission tomography (PET)-CT showed increased FDG uptake in the left pleura, multiple metabolic active lymph nodes in the cervical and mediastinal region and under the diaphragm and increased FDG uptake in the skeleton (shown in Fig. 2). Disseminated malignant mesothelioma was suspected.

Ultrasound-guided closed pleural biopsy, 18G, from the PET-positive, left dorsal parietal pleura showed malignant cells, some with intra-cytoplasmic vacuoles, and immunohistochemistry positive reaction to CD31 and CD34, suggesting pleural epithelioid hemangioendothelioma (shown in Fig. 3). The patient was referred for oncological treatment.
3. Discussion

Epithelioid hemangioendothelioma is a rare vascular tumor (estimated global prevalence is <1,000,000 [2]), which typically arises in liver (21%), both liver and lung (14%), lung exclusively (12%) or bone exclusively (14%) [3,4], whereas pleural effusion only has been described in ~4% of the patients [5]. Histological characteristics include epithelioid cells with intra-cytoplasmic vacuoles and a prominent myxoid and hyalinised or cordoid stroma (shown in Fig. 3) [6]. Immunohistochemistry is often positive for the endothelial markers CD31 (shown in Fig. 3) and CD34 [7]. Generally, epithelioid hemangioendothelioma is more prevalent in females (around 60% [5,8]) and in young adults, but can occur over a broad age range from 2 to 82 years [5,6]. The 5-year survival rate is 60–73% [5,9]. In contrast, pleural epithelioid hemangioendothelioma (PEH) is most frequently seen in elderly men [10], and is associated with a 5-year survival rate of 2% (median survival <1 year) [9]. Symptoms include chest pain, dyspnea, productive cough and fever, thus symptoms of pleural inflammation or infection [5,9,10]. Typical CT findings are small-moderate, unilateral pleural effusions and pleural thickening [10]. The diagnostic yield of pleural cytology has only been considered in two case reports involving three patients: one with negative cytology, one with atypical cells and one with undifferentiated malignancy [10,11]. We found no malignant cells in repeated cytological analysis of the pleural fluid. Treatment options of PEH are casuistically reported, and include pleural decorti-

In our case story the episode of a contralateral pleural effusion four years earlier made us consider the possibility of a connection between the episodes, but we ended up concluding that they were independent of each other. Pleural effusions are not uncommon [15] and a contralateral PEH four years earlier is contradicted by the dismal prognosis of this disease and pleural malignancy in general [1,16].

4. Conclusion

PEH should be remembered as a differential diagnosis in patients with pleural thickening and signs of empyema.

Statement of ethics

Written informed consent was obtained from the patient.

Funding sources

No funding has been received for the study.

Author contributions

All authors contributed to the manuscript writing and approved the submission of the final manuscript. KF stood for drafting. All authors undertook critical revision. Correspondence should be addressed to KF. All authors read and approved the final manuscript.

Declaration of competing interest

The Authors have no conflicts of interest to declare.

Acknowledgement

The authors thank the patient and relatives for allowing presentation as a clinical case.

References

[1] U. Bodger, R.J. Halifax, Epidemiology: why is pleural disease becoming more common? in: N.A. Maskell, C.B. Laursen, Y.G.C. Lee, et al. (Eds.), Pleural Disease (ERS Monograph) European Respiratory Society, Sheffield, 2020, pp. 1–12.
[2] C.E. Woodall, C.R. Scoggins, A.M. Lewis, R.M. McMasters, R.C. Martin, Hepatic malignant epithelioid hemangioendothelioma: a case report and review of the literature, Am. Surg. 74 (1) (2008 Jan) 64–68. PubMed PMID: 18274433.
[3] A. Sardaro, L. Bardoscia, M.F. Petruzelli, M. Portaluri, Epithelioid hemangioendothelioma: an overview and update on a rare vascular tumor, Oncology reviews 8 (2) (2014 Sep 23) 259. PubMed PMID: 25992243. PubMed Central PMCID: 4419652.
[4] S.W. Weiss, F.M. Enzinger, Epithelioid hemangioendothelioma: a vascular tumor often mistaken for a carcinoma, Cancer 50 (5) (1982 Sep 1) 970–981. PubMed PMID: 7093931.
[5] K. Lau, M. Massad, C. Pollack, C. Rubin, J. Yeh, J. Wang, et al., Clinical patterns and outcome in epithelioid hemangioendothelioma with or without pulmonary involvement: insights from an internet registry in the study of a rare cancer, Chest 140 (5) (2011 Nov) 1312–1318. PubMed PMID: 21546438.
[6] T. Anderson, L. Zhang, M. Hameed, V. Rusch, W.D. Travis, C.R. Antoneneu, Thoracic epithelioid malignant vascular tumors: a clinicopathological study of 52 cases with emphasis on pathologic grading and molecular studies of WWTR1- CAMTA1 fusion, Am. J. Surg. Pathol. 39 (1) (2015 Jan) 132–139. PubMed PMID: 25353289. PubMed Central PMCID: 4268225.
[7] R.D. Mesquita, M. Sousa, C. Trinidad, E. Pinto, I.A. Badiola, New insights about pulmonary epithelioid hemangioendothelioma: review of the literature and two case reports, 2017, Case reports in radiology (2017) 5972940. PubMed PMID: 28884037. PubMed Central PMCID: 5573100.
[8] Y. Epelboym, D.R. Englekleimer, F. Thomas-Chausse, A.I. Alomari, A. Al-Ibraheemi, C.C. Trenor 3rd, et al., Imaging findings in epithelioid hemangioendothelioma, Clin. Imag. 58 (2019 Nov - Dec) 59–65. PubMed PMID: 31238187.
[9] P. Bagan, M. Hassan, F. Le Pimpec Barthes, S. Peyrard, R. Soulilamas, C. Daniel, et al., Prognostic factors and surgical indications of pulmonary epithelioid hemangioendothelioma: a review of the literature, Ann. Thorac. Surg. 82 (6) (2006 Dec) 2010–2013. PubMed PMID: 17126100.
[10] E.J. Crotty, H.P. McAdams, J.J. Erasmus, T.A. Spora, V.L. Roggli, Epithelioid hemangioendothelioma of the pleura: clinical and radiologic features, AJR American journal of roentgenology 175 (6) (2000 Dec) 1545–1549. PubMed PMID: 11090371.
[11] F. Photowala, U.S. Hatipoglu, C. Garcia, An older patient with bilateral non-traumatic haemothoraces, BMJ Case Rep. 2012 (2012 Mar 27), https://doi.org/10.1136/bcr.0.2012.5527, 2012. PubMed PMID: 22665796. PubMed Central PMCID: 3316793.
[12] A. Rosenberg, M. Agulnik, Epithelioid hemangioendothelioma: update on diagnosis and treatment, Curr. Treat. Options Oncol. 19 (4) (2018 Mar 15) 19. PubMed PMID: 29546487.
[13] A. Lazarus, G. Fuhrer, C. Malekiari, S. McKay, J. Thurbier, Primary pleural epithelioid hemangioendothelioma (EHE)-two cases and review of the literature, The clinical respiratory journal 5 (1) (2011 Jan) e1–5. PubMed PMID: 21159132.
[14] Y.J. Lee, M.J. Chung, K.C. Jeong, C.H. Hahn, K.P. Hong, Y.J. Kim, et al., Pleural epithelioid hemangioendothelioma, Yonsei Med. J. 49 (6) (2008 Dec 31) 1036–1040. PubMed PMID: 19108030. PubMed Central PMCID: 2628035.
[15] U.H.R. Bodger, C.B. Laursen, Y.G.C. Lee, N.A. Maskell, N.M. Rahman, Epidemiology: why is pleural disease becoming more common?, Sheffield, in: Pleural Diseases (ERS Monograph 87) European Respiratory Society, 2020, 000–.
[16] S.B. Reuter, P.F. Clementsen, U. Bodger, Incidence of malignancy and survival in patients with idiopathic pleuritis, J. Thorac. Dis. 11 (2) (2019 Feb) 386–392. PubMed PMID: 30962981. PubMed Central PMCID: 6499269.