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A Case of Lymphangioleiomyomatosis and Review of Literature

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Abstract

Lymphangioleiomyomatosis (LAM), is a rare cause of diffuse cystic lung disease and primarily involves premenopausal female population. It is seen sporadic or in association with tuberous sclerosis complex. High resolution computed tomography (HRCT) usually establishes the diagnosis in patient with typical findings of thin walled cysts with normal lung parenchyma in between. Surgical lung biopsy is needed only in cases with high suspicion and minimal findings on HRCT.

Introduction

Here, we describe a case of LAM in a young female who presented for spontaneous pneumothorax. Due to persistent air leak, post tube thoracostomy she underwent VATS (video assisted thoracoscopic surgery) guided exploration with lung biopsy. Histopathological diagnosis of emphysematous lung was given. She then underwent CT scan and second opinion from pathology, both of which were consistent with LAM.

Case

33-year-old female with no significant past medical history presented for threedays' history of constant sharp right sided chest pain associated with shortness of breath. On presentation to emergency department, a chest x ray was done which showed a large right pneumothorax (Fig 1). A 12 Fr pigtail catheter was inserted and connected to suction. X ray obtained 4 hours later showed improvement on size of the pneumothorax (Fig 2). She was admitted to thoracic unit for chest tube care and pain control. Chest x ray obtained in subsequent 2nd and 3rd days showed persistent pneumothorax and air leak in chest tube. On 4th day of admission she underwent VATS guided mechanical pleurodesis along with right upper lobe wedge rejection. Gross examination of the affected lung during VATS was reported as having multiple sub pleural blebs. Post-surgery she was observed for 3 more days with the chest tube in place. Histopathology reading of the biopsy specimen came back as "emphysematous changes of air spaces". On 7th day, she was discharged. A week post discharge, she visited pulmonary clinic where she had a CT scan of her chest. CT scan chest was reported to have multiple ill-defined cysts throughout the lung parenchyma (fig 3). The biopsyspecimen was sent for second opinion to different facility. Pathology report came back as multiple cysts lined by spindle cells with Immuno histochemical stain positive for HMB 45. Morphology and immune phenotype supported diagnosis of lymphangioleiomyomatosis (LAM)

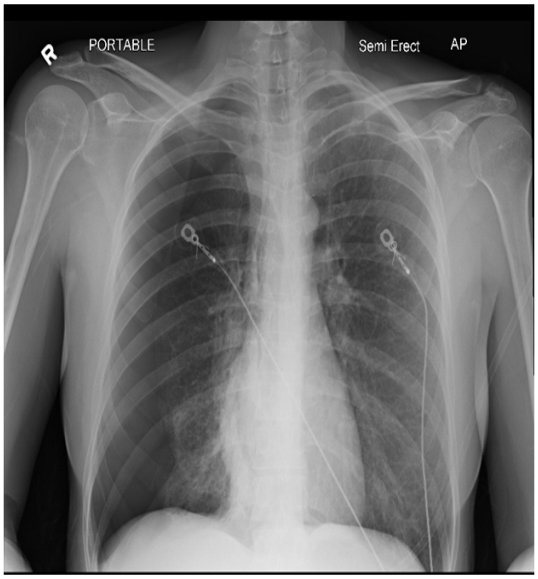

Fig 1. *large right side pneumothorax*

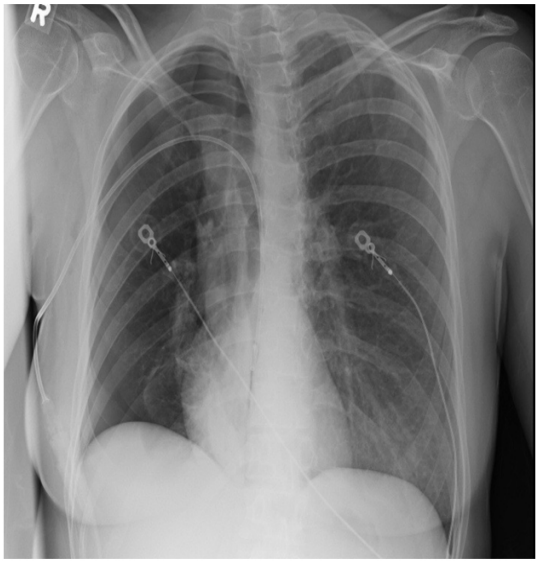

Fig 2. *right side chest tube with resolution of pneumothorax.*

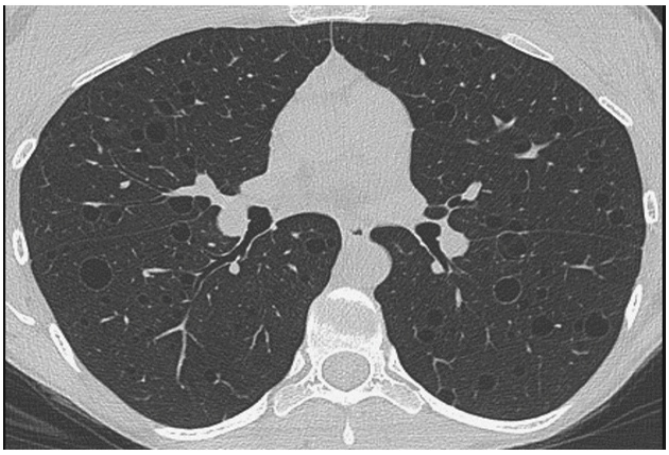

Fig 3. *CT scan showing diffuse thin walled cysts.*

Description

Lymphangioleiomyomatosis (LAM) is a rare disease affecting less than one in one million people. Typically seen in women of childbearing age, it is characterized by a typical smooth muscle proliferation affecting lungs, extra thoracic organs and lymphatic system. Cystic lung lesions are most common finding of the disease leading to distortion of architecture, cystic emphysema, and progressive deterioration of lung function. It can also manifest in abdomen as abdominal tumors known as angiomyolipomas which usually affects the kidneys [1]. Microscopically, the affected organs are in filtrated with LAM cells, which include two types of subpopulations: small spindle shaped cells expressing smooth muscle specific proteins, desmin, actin and vimentin; and epithelioid like cells expressing markers of melanoma cells and immature melanocytes like MelanA/Mart1 and gp100. [2].

LAM can be sporadic or can be associated with Tuberous Sclerosis Complex (TSC). The latter is an autosomal dominant syndrome, characterized by mental retardation, seizures, cerebral calcifications and hamartomatous lesions in several organs [3].

Patients most commonly present with dyspnea (70%), and less commonly with chest pain, cough, wheezing and hemoptysis. [4, 5, 6]. Less common presentations are Chylous pleural effusion, caused by rupture or obstructed lymphatic vessels and spontaneous pnemothoprax as in our patient. Involve ment of axial lymphatics may lead to formation of lymphangioleiomyomas, chyle-filled lymphatic stru ctures within the chest and abdomen. Very rarely patients present solely with flank pain or hematuria from angiomyolipomasof kidney.

Diagnosis is made with radiographic studies, lung function tests and/ or surgical removal and microscopic study of the affected tissue. The presence of thin walled cysts throughout the lung on high resolution CT (HRCT), is the most diagnostic feature of LAM. [5, 7, 8]. If HRCT findings are non-diagnostic, then a surgical biopsy is done. Abnormal proliferation of smooth muscle cells (LAM cells) along with cystic changes confirms the disease on histologic examination. Pulmonary Function Test (PFT) is used to assess disease progression and severity of LAM, although it can be normal in upto 30% of the patients. [7, 8]. Functional abnormalities most frequently observed are airflow obstruction and decreased lung diffusion capacity.

Very few cases of LAM have been reported by far. Robert H. Sherrieret al reported 8 women with open lung biopsy proven LAM. Most common symptoms included shortness of breath in 5 patients, dyspnea on exertion in 3 patients, abdominal pain and swelling in 2 and pneumothorax in 2 patients. Daniel C. Rappaport et al reported 4 patients and all of them presented with shortness of breath, 2 had recurrent pneumothoraces, 1 patient had recurrent chylous pleural effusions and 1 patient had recurrent episodes of hemoptysis. Yuen-Yee Wong et al reported a patient who presented with right lower quadrant abdominal pain and fever. CT revealed multiple thin walled pulmonary cysts and an encapsulated mass in the retroperitoneum which was compatible with lymphangioleiomyomatosis and retroperitoneal lymphangioma.

Given the rarity of the disease and variable clinical course the prognosis of LAM is unclear. It usually progresses slowly with a median survival more than 8 years from diagnosis leading to respiratory failure and death. Lung transplantation is the standard treatment of lymphangioleiomyomatosis, but it can recur in transplanted lungs. Sirolimus and Everolimus, mTORC1 inhibitors inhibit growth and proliferation of LAM cells by targeting the mTOR activated signaling pathway. [9] Treatment with sirolimus stabilized lung function by slowing decline in FEV1 and DLCO when used for a period of 3.5 years. [10]. Recent ATS/JRS guidelines recommended treatment of patients with abnormal lung function, that is FEV1 less than 70% of predicted or declining lung function with sirolimus. It is also recommended in patients with symptomatic chylous fluid effusions before invasive procedures are considered. (11)

Reference

[1] Harari S, Torre O, Moss J. Lymphangiomyomatosis: What do we know and what are we looking for? EurRespir Rev 2011; 20: 34-44.

[2] Matsumoto Y, Horiba K, Usuki J, et al. Markers of cell proliferation and expression of melanosomal antigen in.

[3] Franz DN, Brody A, Meyer C et al. Mutational and radiographic analysis of pulmonary disease consistent with lymphangioleiomyomatosis and micronodularpneumocyte hyperplasia in women with tuberous sclerosis. Am J RespirCrit Care Med 2001; 164: 661-666.

[4] lymphangioleiomyomatosis. Am J Respir Cell Mol Biol 1999; 21: 327-336.

[5] Zhe X, Schuger L. Combined smooth muscle and melanocytic differentiation in lymphangioleio myomatosis. J Histochemcytochem 2004; 52: 1537-1542.

[6] Ryu JH, Moss J, Beck GJ, et al. The NHLBI lymphangioleiomyomatosis registry: characteri stics of 230 patients at enrollment. Am J Respir Crit Care Med 2006; 173: 105- 111.

[7] Cohen MM, Pollock-Barziv S, Johnson SR. Emerging clinical picture of lymphangioleiomyomatosis. Thorax 2005; 60: 875-879.

[8] McCormack FX. Lymphangioleiomyomatosis: a clinical update. Chest 2008; 133: 507-516.

[9] Avila NA, Dwyer AJ, Murphy- Johnson DV, Brooks P, Moss J. Lymphangioleiomyomatosis: correlation of qualitative and quantitative thin section CT with pulmonary fuction tests and assessment of dependence on pleurodesis. Radiology 2002; 223: 189-197.

[10] Krymskaya VP, Goncharova EA. PI3K/mTORC1 activation in hamartoma syndromes: therapeutic prospects. Cell Cycle 2009; 8: 403-413.

[11] Yao J, Traveira-DaSilva AM, Jones AM, et al. Sustained effects of sirolimus on lung function and cystic lung lesions in lymphangioleiomyomatosis. Am J RespirCrit Care Med 2014; 190: 1273 - 1282.

[12] McCormack FX, Gupta N, Finlay GR, et al. Official American Thoracic Society/Japanese Respiratory Society Clinical Practice Guidelines: Lymphangioleiomyomatosis Diagnosis and Mana gement. Am J RespirCrit Care Med 2016; 194: 748-761.

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