Case Report

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TANAFFOS

A Rare Case of Pulmonary Hypertension, Misdiagnosed as Interstitial Lung Disease: Pulmonary Capillary Hemangiomatosis

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Pulmonary capillary hemangiomatosis (PCH) is a rare cause of pulmonary hypertension. We reported a histologically confirmed PCH in a 42-yr-old lady. She presented a progressive dyspnea and cough after an upper respiratory tract infection. She had a leukocytosis and elevated ESR with negative collagen vascular laboratory results. Her chest imaging revealed mediastinal lymphadenopathy with bilateral ground glass opacities with increased interstitial septal thickening in lung parenchyma. Patient echocardiography showed severe right ventricular dilatation with a measured systolic pulmonary arterial pressure of about 105mmHg. Right heart catheterization revealed a mean pulmonary arterial pressure on 30 mmHg with a pulmonary capillary wedge pressure of about 7 mmHg. After starting anti PH treatment, the patient suffered a pulmonary edema and due to abnormal patient response to anti-PH therapies and radiologic findings. Finally, open lung biopsy was performed and showed features of pulmonary capillary hemangiomatosis.

Keywords: Pulmonary Hypertension; Interstitial Lung Disease; Pulmonary Capillary Hemangiomatosis

INTRODUCTION

PVOD (Pulmonary Veno Occlusive Disease) and PCH (Pulmonary Capillary Hemangiomatosis) are two extremely rare diseases that can lead to dyspnea and non-specific symptoms (1). These diseases might be introduced with the clinical manifestation of right-sided cardiac failure and pulmonary artery hypertension. Histopathologically, these two diseases seem to be different but they can occur together (2). Pathophysiology and hemodynamic problems of these diseases result from occlusion and its spread to all or parts of the vascular bed including alveolar capillary in case of PCH and pulmonary venous and venulae in case of PVOD (2). An important point that highlights the diagnostic significance of these diseases is the method of their treatment and their differentiation from other pulmonary vascular disorders such as idiopathic pulmonary arterial hypertension (iPAH), pulmonary thromboembolism (PTE), and interstitial lung diseases (ILD) such as sarcoidosis, fibrosis, and pulmonary hemosiderosis. Unlike iPAH, if anti-PH therapy is prescribed alone, it causes pulmonary edema and patient instability. According to clinical findings, echocardiography, and clinical suspicion regarding this category of disorders, one can draw on an open lung biopsy to achieve a final diagnosis. However, because the patient might be critically ill and have a pulmonary

hypertensive state, this procedure might pose certain threats. In this report, we present an extremely rare case of interstitial lung disease (ILD) based on interstitial thickening observed on high-resolution CT images. She was receiving non-specific treatment. Not only she did not experience a considerable improvement, but she was referred to the clinic again with a critically ill status and hospitalized for the second time.

CASE SUMMARIES

Clinical Presentation

A 42-year-old woman presented with dyspnea and cough after a lower respiratory tract infection. Despite various antibiotic treatments, her symptoms were aggravated so upon her visit at the clinic, she revealed functional class-III. Meanwhile, she had lost 15 kgs and did not have any medical history of chest pain, syncope, or hemoptysis.

The patient had no history of pulmonary, cardiovascular, rheumatologic, diabetic, or thyroid diseases, nor any experience with abortion. As a housewife with no history of alcohol, tobacco, or opioid abuse, and no exposure to animals, she has not lived in areas with poor air quality or hazardous dust.

Para-clinical Findings

First Admission

In her first admission, a lung CT image without contrast and high resolution of pulmonary view revealed bilateral ground glass scattered interstitial thickening in addition to fibroatelectasia in the right upper lobe, in favor of ILD. Mediastinal lymphadenopathy was also seen (Figure 1). Based on the abovementioned findings, bronchoscopy along with transbronchial biopsy was taken. As a result of the biopsy, ILD was brought up and the patient was prescribed to orally take 25 mg of prednisolone, 50 mg of azathioprine, and azithromycin daily in addition to ipratropium bromide, fluticasone, and salmeterol sprays.

Second Admission

In her second admission, clinical manifestations included the following: central cyanosis, stable vital signs, and no signs of icterus or skin rash. In a physical examination of the heart and lung, S1 was normal and S2 was intensified. The pulmonary auscultation was normal. She showed neither signs of hepatosplenomegaly, ascites, or collateral vessels in the abdominal area, nor any signs of lymphadenopathy, clubbing, or edema in extremities.

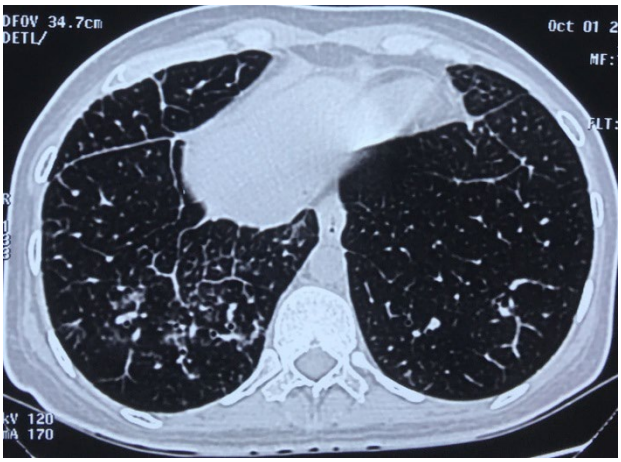

Figure 1. Interstitial thickening in a patient with Pulmonary Capillary Hemangiomatosis.

In her lab results, the patient had leukocytosis (WBC+15600) predominated with neutrophil, Hg: 12, HTC: 40, PLT: 363000, and ESR: 119. Renal and liver function test results were normal. Collagen vascular tests including ANA, RF, dsDNA, and Anti SCL 70, were negative.

Then, echocardiography was done that revealed a serious disorder in the right heart functioning along with pulmonary arterial pressure of 105 mmHg. Based on this finding, pulmonary CT angiography was conducted that revealed parenchymal enhancement which diagnostically suggests "Pulmonary Capillary Hemangiomatosis". According to these findings, echocardiography with agitated saline injection revealed contrast on the left side after the fourth beat which suggests extracardiac shunt. As a result, right heart catheterization was done in which mean pulmonary pressure was 30 mmHg and pulmonary wedge pressure was 7 mmHg. The final result of the vaso-

reactivity test was reported as negative. Considering all of these findings, an open lung biopsy was conducted which suggested diffused interstitial thickening, focal necrosis, proliferation of pulmonary capillary, and old bleeding. All of the abovementioned findings proposed Pulmonary Capillary Hemangiomatosis (PCH).

Upon performing an open pulmonary biopsy, the patient's pulmonary cardiac functioning was worsened while her dyspnea was intensified leading to the prescription of diuretic infusion, milrinon, and ilomedin. The patient was stabilized and discharged after 10 days. She was later nominated for heart-lung transplantation. Unfortunately, one month after her discharge and upon intensification of her symptoms, she was hospitalized again and received medical treatments but the symptoms took the course towards respiratory failure under mechanical ventilation. Right-sided failure was seen in echocardiography. Finally, the patient died due to right-sided failure.

DISCUSSION

PCH is a rare idiopathic pulmonary vascular disease in which PH occurs due to endothelial proliferation of capillaries. Although this disorder was first reported in 1978, there are few available reports in the literature (1, 3, 4). The most prominent symptoms include progressive dyspnea (in 1/3 of cases) and hemoptysis (in 2/3 of cases). Moreover, other symptoms such as chest pain, syncope, and findings related to right-sided failure could probably appear (1, 3). The most predominant clinical symptom in this patient was exertional progressive dyspnea which was similar to the cases mentioned in the previous studies.

Radiographic image, particularly chest CT scan, in patients with PCH could reveal ground glass opacity, along with signs caused by PH (right-sided hypertrophy and enlargement of pulmonary artery and its branches). Other radiological manifestations of the disease include inter-alveolar interstitial thickening, mediastinal lymphadenopathy, and pleural effusion (1, 5).

Regarding this case, the noteworthy point is a misdiagnosis of the disorder merely as ILD and ignoring pulmonary vascular involvement. Having conducted echocardiography, we spotted the mismatch between PH and the intensity of pulmonary vascular involvement that led us to consider performing CT angiography. It revealed parenchymal enhancement and pulmonary vascular involvement, leading to clinical diagnosis. Considering the importance of diagnosis of these diseases and the different treatment approaches, an open lung biopsy was done which was a high-risk operation due to the pulmonary hypertension and the patient's critical health status.

It is important to note that patterns observed in CT scans without contrast are not specific and can also be seen in PVOD, which is a potential differential diagnosis for PCH patients. In some cases, it is nearly impossible to differentiate between these two disorders, leading many researchers to consider them as different expressions of the same entity (6, 7). Radiographic images of the patient were reported as fibrosis and inter-alveolar interstitial thickening (Figure 1). But, the parenchymal enhancement in CT images led to doing echocardiography with agitated saline which brought up PCH (Figure 2).

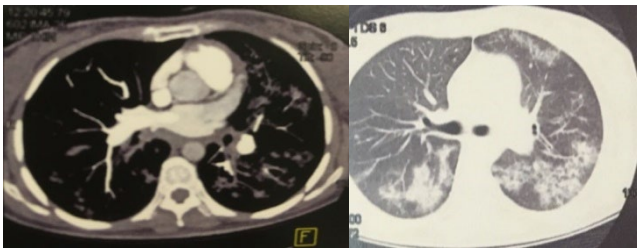

Figure 2. Mediastinal and pulmonary window with contrast: interstitial thickening, parenchymal enhancement in capillary hemangiomatosis. Centri lobular nodular ground glass opacity and enlarged pulmonary artery in a patient with Pulmonary Capillary Hemangiomatosis

In histopathological terms, microscopic images of the disease include capillary proliferation and plexiform arteriopathy in the pulmonary interstitium (2). In addition, arterial, venule, and capillary invasion of inter and intra-alveolar spaces and bronchioles (Figure 3). Lung tissue

involvement is scattered and therefore, manifested as a reticulonodular pattern in radiographic images.

Pericardial capillaries and pleural and mediastinal adenopathy are also involved but at a considerably lower level. The clinical manifestation of the disease varies according to the pulmonary structures of the patient, so it might overlap with those of iPAH, Atypical Pulmonary Fibrosis, Atypical Interstitial Lung Disease, and PVOD.

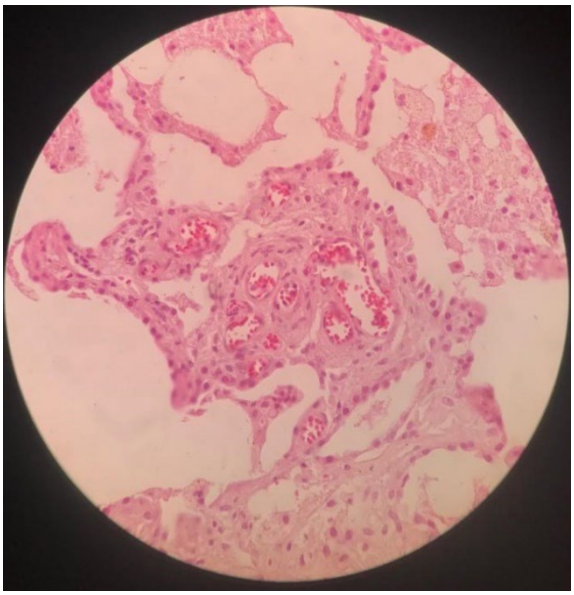

Figure 3. Interstitial thickening, focal necrosis, proliferation of pulmonary capillary, and old bleeding

This patient had also been receiving treatment for a couple of months misdiagnosed as an ILD case. After the clinical manifestations emerged, the disease progressed rapidly and became fatal. That is why while interpreting interstitial involvement patterns, the physician must take into consideration these disorders.

Cases reported in the literature mostly had been diagnosed through autopsy or biopsy during transplantation (8, 9). An open lung biopsy was performed on the patient about 10 months after the first symptoms appeared. Unfortunately, the delay in diagnosis resulted in her condition becoming critical, affecting both her lungs and heart. Accordingly, intravenous diuretics and ilomedin with minimum dose were prescribed to stabilize the patient by improving her dyspnea.

In fact, on one hand, there are few medical treatments applied to such patients, and they are simply limited to the reported cases. On the other hand, typical anti-pulmonary hypertension treatments are mostly ineffective in these patients and might even lead to pulmonary edema. A handful of articles have also reported the prescription of interferon alpha and doxycycline for the patients (10, 11).

CONCLUSION

Paying sufficient attention to the diagnosis of pulmonary vascular disorders in cases with abnormal interstitial patterns is of extreme importance since the disease has a fulminant progressive nature. Thus, prompt and timely diagnostic practice for ruling out other differential diagnoses is of high significance and effective treatment must be given to the patient before they reach a critical situation.

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