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Case Report

Rapid progressive interstitial lung disease as initial manifestation of primary Sjögren's syndrome: a case report

Yihua Lin[1,2], Qun Yi[1*], Deyun Cheng[1*]

[1]Department of Respiratory Medicine, West China Hospital of Sichuan University, China; [2]Department of Respiratory Medicine, The First Affiliated Hospital of Xiamen University, China. [*]Equal contributors.

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Abstract: Primary Sjögren's syndrome is a chronic inflammatory disorder with many extraglandular organ systems involved, including the lungs. Diffuse interstitial lung disease is the most serious form of lung involvement. Parenchymal lung involvement in primary Sjögren's syndrome is usually manifested by cough and/or slowly progressive dyspnea and most of the cases present as chronic course. We describe here a case of primary Sjögren's syndrome who presented as rapid progressive interstitial lung disease. Improvement was obtained with treatment of corticosteroids and ventilatory support at early time. To the best of our knowledge, this is the first report documenting primary Sjögren's syndrome initially presenting as rapid progressive interstitial lung disease and it enriches our understanding of the clinical manifestations of primary Sjögren's syndrome.

Keywords: Primary Sjögren's syndrome, rapid progressive interstitial lung disease, nonspecific interstitial pneumonia, lymphocytic interstitial pneumonia

Introduction

Primary Sjögren's syndrome (pSS) is a chronic inflammatory disease characterized by lymphocytic infiltration of exocrine glands, mainly the salivary and lacrimal glands. However, extraglandular organ systems may be involved frequently, including the lungs. Although evaluation of asymptomatic patients with computed tomography, pulmonary function tests, and bronchoalveolar lavage detected abnormalities in up to 75% of patients [1], clinically significant pulmonary involvement affects approximately 9-24% of patients and may be the first manifestation of this disease [2, 3]. Generally, these cases presented as chronic course of cough and/or slowly progressive dyspnea at exertion. Herein we report a case of pSS who presented as rapid progressive interstitial lung disease.

Case report

A 48-year-old female patient was admitted to our department with progressive dyspnea and dry cough for 5 days. She had been in excellent health until 5 days ago, she noted herself to be short of breath on moderate exertion. The dyspnea rapidly worsened, and it progressed to rest dyspnea on admission. She denied any chest pains, hemoptysis, fevers and wheezing. No arthralgia, xerostomia, xerophthalmia or difficulty of swallowing was noticed. She had no known recent travel, infections or medications. Her occupational history and family history were noncontributory. The patient had no history of chronic disease and smoking.

Physical examination findings were temperature of 36.8°C, blood pressure of 132/60 mmHg, heart rate of 110 bpm, respiration rate of 32 breaths per minute. Mild cyanosis was seen on lips. No jugular venous distention. No palpation of lymph nodes. Lung ausculation revealed decreased breath sounds. Examination of the extremities revealed no clubbing or edema.

The results of routine laboratory studies were within normal levels, including complete blood cell count, coagulation, brain natriuretic pep-

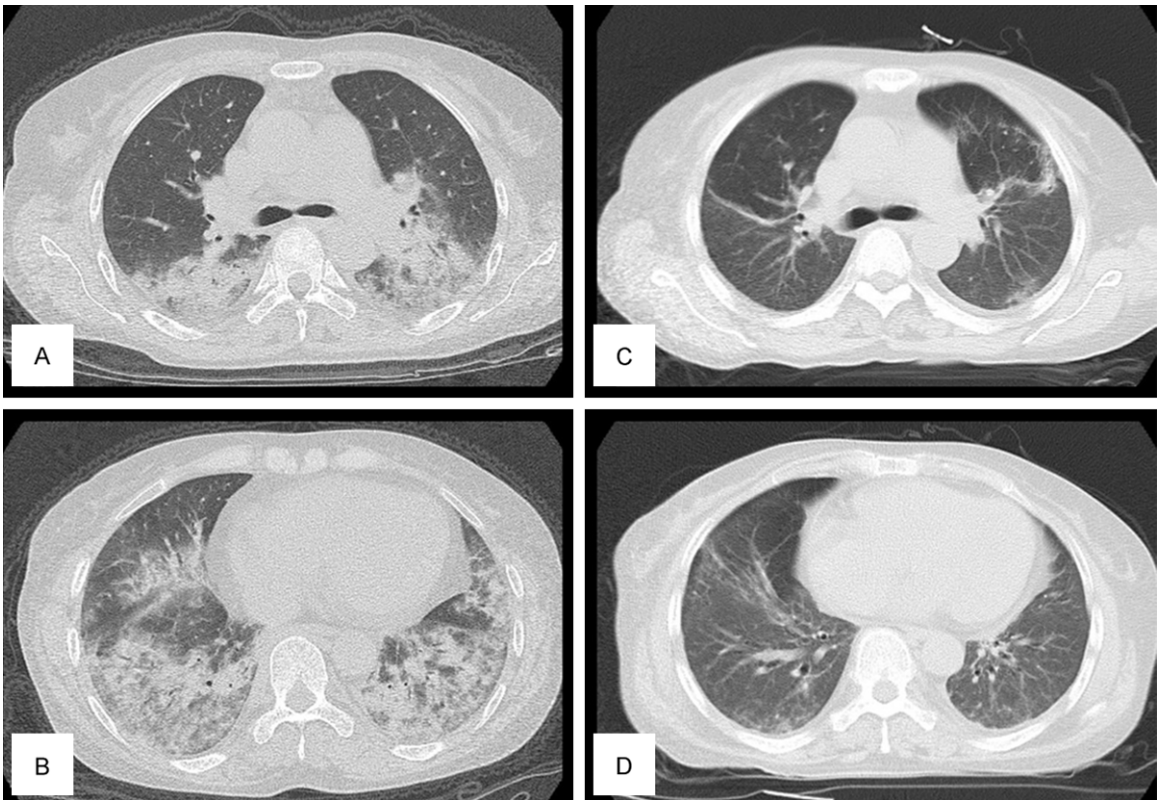

Figure 1. A and B showed diffuse ground-glass opacities, reticular opacities, and areas of consolidation in bilateral lung lobes on admission. C and D showed resolution of most of pulmonary infiltrates after treatment.

tide, liver function, renal function, tumor markers (squamous cell carcinoma antigen, carcinoembryonic antigen, tissue polypeptide antigen, carbohydrate antigen 19-9). Procalcitonin level was normal. Serological tests for human immunodeficiency virus, cytomegalovirus and Epstein-Barr virus were negative. Erythrocyte sedimentation rate was 60 mm/1st h. Among the checked autoimmune markers (C3, C4, rheumatoid factor, antinuclear antibody, antineutrophil cytoplasmic antibodies, anticardiolipin immunoglobulin isotype G, anti-ds DNA, anti-Sm, anti-SSA/Ro, anti-SSB/La, anti SCL-70, anti Jo-1, and anti-RNP antibodies), and immunoglobulin G, A, and M, only positive result for anti-SSA/Ro were observed. Arterial blood gas analysis (ABG) under 2 litre oxygen inhalation: partial pressure of oxygen in arterial blood (PaO_2) 45 mmHg, partial pressure of carbon dioxide in arterial blood ($PaCO_2$) 30.8 mmHg.

High-resolution CT showed diffuse ground-glass opacities, reticular opacities, and areas of consolidation in bilateral lung lobes (**Figure 1A**, **1B**). Schirmer's tear test results in both eyes were < 3 mm in 5 min (normal > 15 mm). Salivary gland dynamic tracer emission CT with 99mTc-sodium pertechnetate showed decreased uptake in right parotid gland and reduced excretion in both glands. Pathology of lip biopsy revealed lobules of mucoserous gland with aggregation of lymphocytes infiltrate (**Figure 2**).

Positive salivary scintigraphy, positive Schirmer's test, positive anti-SSA/Ro, and histopathological signs (focus score, ≥ 1) in this case confirmed the diagnosis of primary Sjogren's syndrome (pSS) according to a revised version of the European criteria proposed by the American–European Consensus Group [4]. Rapid progressive interstitial pneumonia associated with pSS was also diagnosed.

The patient was transferred to the intensive care unit and noninvasive ventilation (NIV) was initiated. Methylprednisolone 160 mg/day was started by intravenous injection which was tapered gradually. The patient's dyspnea and cough soon improved. ABG (NIV, fraction of inspiration oxygen 40%) obtained 5 days after

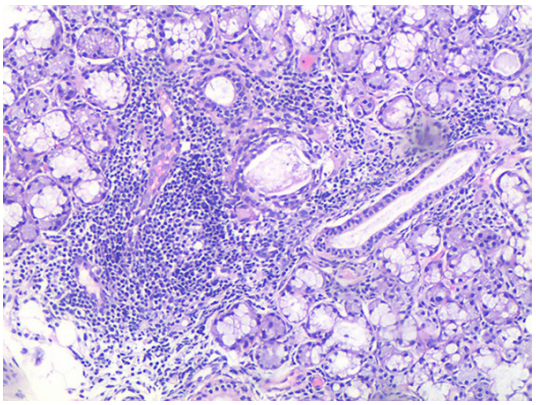

Figure 2. Pathology of lip biopsy revealed lobules of mucoserous gland with aggregation of lymphocytes infiltrate.

corticosteroid had been administered: PaO_2 82 mmHg, $PaCO_2$ 36.8 mmHg. Chest CT obtained 20 days after treatment showed resolution of most of pulmonary infiltrates (**Figure 1C**, **1D**). ABG without oxygen supplementation was obtained at the same time: PaO_2 85 mmHg, $PaCO_2$ 35 mmHg. Meanwhile pulmonary function tests showed a restricted pattern with lung capacity of 70% of predicted and diffusing capacity for carbon monoxide (DLCO) of 68% meanwhile. The patient was discharged 24 days after her admission with normal ABG in a good condition with tapered prednisolone. She remained stable after corticosteroids therapy and no progression of disease in 6 months follow-up.

Discussion

Sjögren's syndrome (SS) is a systemic inflammatory disorder that commonly affects exocrine glands. It is classified as either primary SS (pSS) or as secondary SS (sSS) if the sicca syndrome is associated with another systemic disease (rheumatoid arthritis, systemic sclerosis, systemic lupus erythematosus, dermato- or polymyositis). Although sicca features are the central clinical manifestations of the disease, systemic features often exist, including joint involvement, Raynaud's phenomenon, vasculitis, involvement of the central and peripheral nervous systems, gastrointestinal tract involvement, renal and pulmonary involvement [5]. These extraglandular manifestations are sometimes severe and can be life-threatening.

The reported frequency of pulmonary involvement in pSS varies widely, ranging from 9-75% depending on the detection method employed [1-3]. The entire respiratory tract can be involved, with a wide spectrum of manifestations including obstructive small airway disease, xerotrachea and bronchial sicca, lung cysts, pulmonary amyloidosis, pulmonary hypertension, lymphoinfiltrative or lymphoproliferative lung disease, pleural involvement, and various patterns of interstitial lung disease (ILD) [6].

Diffuse interstitial lung disease is the most serious form of lung involvement due to its potentially progressive nature and the concomitant risk of respiratory failure. Although some patients may be asymptomatic, parenchymal lung involvement in SS is usually manifested by cough and/or slowly progressive dyspnea at exertion and most of the cases present as chronic course. Respiratory failure usually appears in the end-stage of clinical course. However, in our case, rapid progressive interstitial lung disease (RP-ILD) presented as an initial manifestation of primary Sjögren's syndrome. The patient's symptoms worsened rapidly and deteriorated to acute respiratory failure without any inducing factors such as infection. The reason of the variety of the clinical manifestations is not known but likely associates with the specific underlying pathology. Patients with pSS are at risk for several different types of ILD, including nonspecific interstitial pneumonia (NSIP), organizing pneumonia (OP), usual interstitial pneumonia (UIP), lymphocytic interstitial pneumonia (LIP), cystic lung disease, and diffuse interstitial amyloidosis [7, 8]. Although invasive diagnostic test (bronchoalveolar lavage, transbronchial biopsy, surgical lung biopsy) could not be performed in our case because the patient had difficulty in tolerating the procedure in the initial phase of evaluation, we speculate that NSIP or LIP is most likely to be the histopathology pattern on the basis of imaging manifestations and favorable response to prednisone therapy. Further clinical experiences are needed to confirm this speculation.

This case illustrates heterogeneous clinical course of ILD associated with pSS. Referring to clinical phenotypes of idiopathic pulmonary fibrosis [9], ILD associated with pSS might also has three subtypes: stable or slowly progressive course, rapid progressive course and acute exacerbation course. Almost all the patients

are in stable or slowly progressive course. Yoshihisa *et al* has described acute exacerbation of ILD associated with pSS [10]. In that case report, hypoxemia acutely worsened in a pSS patient who had been dyspnea and coughing for more than 1 month. However, in our case, dyspnea worsened rapidly and deteriorated to acute respiratory failure in 5 days in a previously healthy woman who had not been diagnosed any connective tissue disease. So we labeled our case as rapid progressive course. There are no similar reports in the literature review which make our case unique and interesting.

Among the connective tissue diseases, RP-ILD has been reported mostly in dermatomyositis [11-13]. This condition commonly fails to respond to aggressive therapy, such as high-dose corticosteroids and immunosuppressants and has a very poor outcome and prognosis [11-13]. Fortunately, our patient was successfully treated with corticosteroids and ventilatory support at an early time point. Effective therapy for patients with RP-ILD may associates with histopathology pattern and underlying disease.

In conclusion, we presented a rare but interesting report documenting primary Sjögren's syndrome initially presenting as rapid progressive interstitial lung disease. This case illustrates heterogeneous clinical course of pSS and enriches our understanding of the clinical manifestations of pSS. Additionally, pSS should be included in the differential diagnosis of a number of forms of interstitial lung disease.

Disclosure of conflict of interest

None.

Address correspondence to: Deyun Cheng or Qun Yi, Department of Respiratory Medicine, West China Hospital of Sichuan University, NO. 37 Guoxue Alley, Sichuan, Chengdu 610041, China. Tel: +860288-5423331; Fax: +8602885422375; E-mail: chengdeyunSCU@163.com (DYC); yiqun_scu@163.com (QY)

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