Cavitary pulmonary lesions in systemic lupus erythematosus: an unusual manifestation

Amir Reza Dalili[1], Reza Lotfi[2]*, Seyedeh Maryam Mousavi[3]

[1.] M.D., Assistant Professor of Radiology, Radiology Department, College of Medicine, Guilan University of Medical Sciences, Rasht, Iran
[2.] M.D., Radiology Resident, Radiology Department, College of Medicine, Guilan University of Medical Sciences, Rasht, Iran
[3.] Ph.D. Student of Health Psychology, Faculty Member of Islamic Azad University-Rasht brunch, Rasht, Iran

Corresponding Author:
Dr. Reza Lotfi, Radiology Department, College of Medicine, Guilan University of Medical Sciences, Rasht, Iran. Tel: +98.1313227346, E-mail: r.lotfi.md@gmail.com

Abstract
Systemic lupus erythematosus (SLE) is an autoimmune disease of unknown pathogenesis. The frequency of SLE with cavitary lesion manifestation is very rare and is thought to be due to infection or pulmonary embolism. A 19-year-old female diagnosed with SLE complicated by lupus nephritis and cavitary pulmonary lesion is presented in this case report. Other diseases that can lead to such lesions were ruled out in the patient. The patient improved briefly after the initiation of immunosuppressive therapy, but was unresponsive to supportive treatment due to pneumothorax. Pneumothorax is caused by cavitary lesions and possibly bronchopleural fistulas – these later caused respiratory distress and death. The patient did not show any improvement in the lesions after the initiation of immunosuppressive therapy. This case report suggests that the differential diagnosis of cavitary lung lesions should include SLE.

Keywords: cavitary pulmonary lesion, systemic lupus erythematosus

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1. Introduction

Systemic lupus erythematosus (SLE) is an autoimmune disease of unknown pathogenesis that affects several organs (1-3). SLE can affect any part of the respiratory system and have a variety of pulmonary manifestations, including the following: pleuritis, pleural effusion, pneumonitis, diffuse alveolar hemorrhage, bronchiolitis obliterans, vasculitis, pulmonary hypertension, and impaired function of the respiratory and diaphragm muscles (4). However, the prevalence of cavitary lesions in systemic lupus is very rare; therefore, lesions are usually secondary to infection or pulmonary embolism (5). Other diseases that may cause similar lesions include malignancy and both Wegener and rheumatoid arthritis (6, 7). With regard to systemic lupus as a rare differential diagnosis of pulmonary cavitary lesions, early diagnosis can help prevent a need for unnecessary or invasive diagnostic measures and therefore decrease the likelihood of the development of complications that can sometimes be life-threatening. The aim of this research was to present a rare case of SLE manifested with cavitary pulmonary lesions.

2. Case Presentation

The patient was a 19-year-old female with SLE complicated by class III lupus nephritis and was under treatment for 3 months with CellCept 300mg/tds and prednisolone 60mg/d that was gradually tapered to 35mg/d. She was referred because of a fever of 38.5 degrees Celsius and a non-productive cough that lasted 3 weeks. She also did not respond

to antibiotic treatment (intravenous ceftriaxone). The patient's past medical history showed joint pain (arthralgia) in the knees, proximal interphalangeal joints (PIP), malar rash, oral ulcers, and leukopenia. SLE was diagnosed.

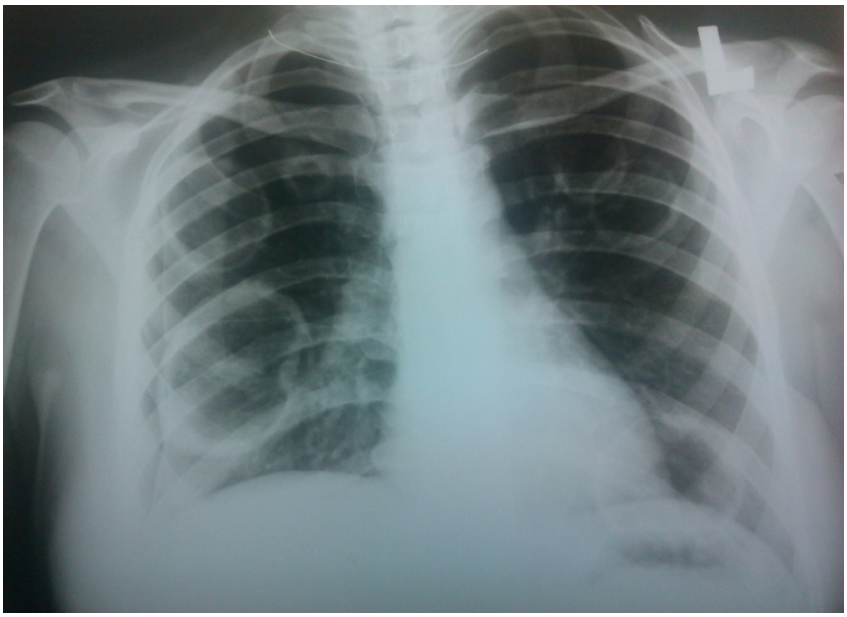

Figure 1. Chest x-ray showing three cavities in right lobe and three cavities in left lobe in lower and upper zone

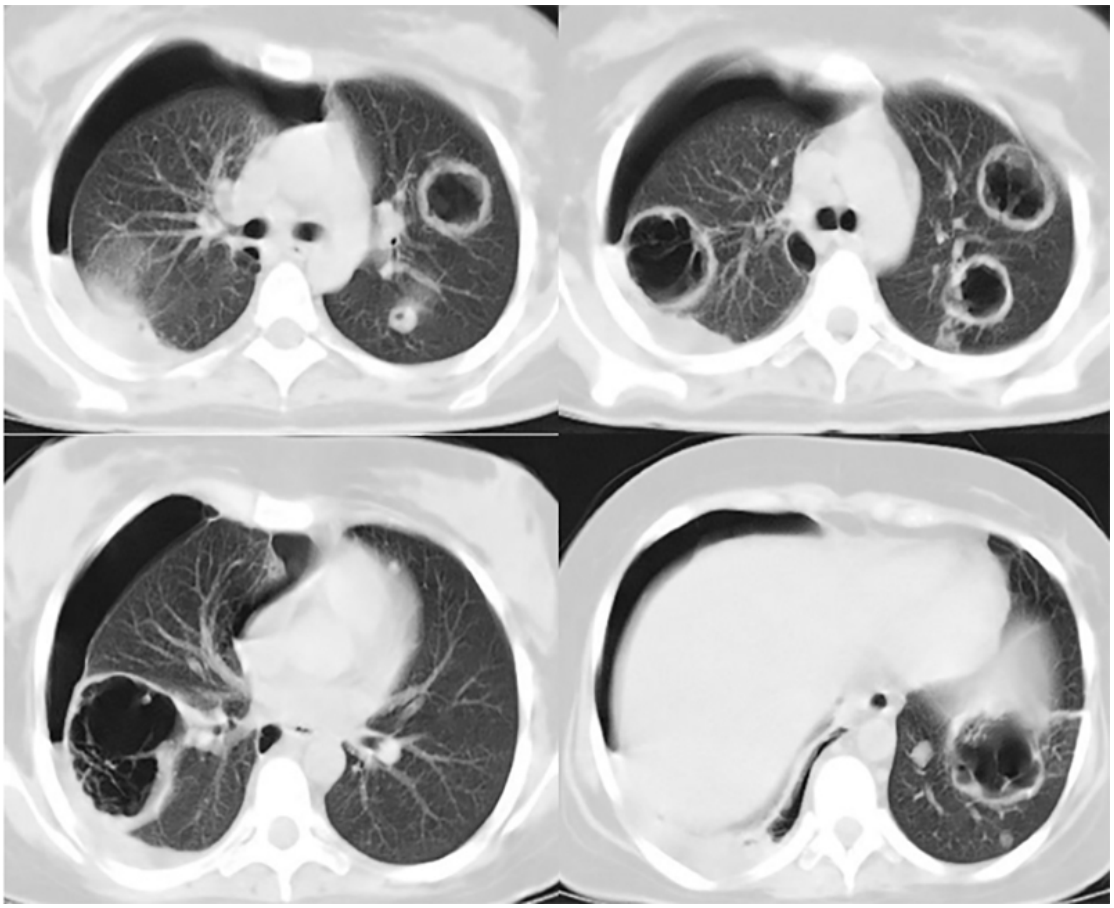

Figure 2. Spiral CT scan of the chest, showing several cavities and nodules in both lungs, some of which are cavitary. In addition, mild pleural effusion and pneumothorax were seen on the right side

Vital signs were as follows: blood pressure 100/70 mmHg, pulse 100 bpm, respiratory rate 20/min, and body temperature 38.5°C. She had decreased breath sounds in one-third to the right lower chest area. The rest of her examination was normal. Laboratory results were: WBC (13800/ul), Hb (14g/dl), CRP (+2), ANA (+), RF(-), BUN (23mg/dl), Cr (0.62mg/dl), SGPT (86 IU/L), SGOT (41 IU/L), LDH (738 U/L), Proteinuria (+1), blood (+2), WBC (18-20), and RBC (20-22). Urine culture, blood culture, Wright test, Coombs Wright test, Widal test, c-ANCA (for Wegener), sputum smear and culture, and PPD test were reported negative. In the same way, bronchoscopy and bronchoalveolar lavage for malignancy, bacterial, viral, fungal, and M. tuberculosis infections were tested negative. Coagulation tests and other laboratory tests including echocardiography and venous Doppler ultrasound of lower extremity for DVT were normal. Chest radiography revealed several cavities in both lungs and a blunting of the right costophrenic angle (Figure 1).

The general condition of the patient improved briefly after she was treated with intravenous methyl prednisolone, but a few days later she began to experience respiratory distress. A spiral computed tomography scan of the chest showed several cavities and nodules in both lungs, some of which were cavitary. Mild pleural effusion and pneumothorax were seen on the right side (Figure 2). The patient was treated with nasal oxygen therapy and a chest tube placed in the right side, but after a few days the patient's general condition worsened and she developed respiratory distress. In addition, a pneumothorax occurred in the left lung and a chest tube was placed in this side. Her condition continued to deteriorate. The patient then suffered cardiopulmonary arrest and died.

3. Discussion

As previously mentioned, SLE has a variety of pulmonary manifestations. SLE with cavitary lesions is reported very rarely. In the study of Webb and Gamsu (8), seven patients with SLE and mixed connective tissue disease with pulmonary cavitary nodules were studied. Among these patients, four were cases of infection, one a case of pulmonary embolism, and two cases with unknown etiology. In a study by Torok et al. (4), an SLE case with cavitary lesions was reported who improved after the initiation of immunosuppressive therapy. Also, in the study of Maden et al. (5), an SLE case with cavitary lesions was reported where the lesions improved after steroid therapy.

Najjar et al. (9) also reported cavitary lung masses caused by CMV for two lupus cases on corticosteroid treatment. Azuma et al. (10) reported cavitary pulmonary lesions in a patient with lupus under immunosuppressive therapy who had CMV pneumonitis. In this case report, a female SLE case complicated by lupus nephritis with cavitary pulmonary lesions was reported. Other diseases (including malignancy, bacterial, viral, fungal, and M. tuberculosis infections, septic emboli, pulmonary thromboembolism, Wegener and rheumatoid arthritis) that lead to such lesions were ruled out. The patient improved briefly after the initiation of immunosuppressive therapy, but unfortunately was unresponsive to supportive treatment, developed respiratory distress due to pneumothorax, and died.

4. Conclusions

A cavitary lung lesion associated with SLE is extremely rare and may be observed in the absence of other factors that cause cavitation. This case presentation suggests that SLE should be considered in the differential diagnosis of cavitary lung lesions.

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Conflict of Interest:
There is no conflict of interest to be declared.

Authors' contributions:
All of authors contributed to this project and article equally. All authors read and approved the final manuscript.

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