Spontaneous pneumomediastinum with subcutaneous emphysema in a patient with rheumatoid arthritis and interstitial pneumonia

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DESCRIPTION

Spontaneous pneumomediastinum with subcutaneous emphysema is a rare complication of interstitial lung disease associated with connective tissue diseases. Here, we report a case of spontaneous pneumomediastinum with subcutaneous emphysema that developed in a patient with rheumatoid arthritis and interstitial pneumonia.

The patient was a middle-aged man who had a history of rheumatoid arthritis and interstitial pneumonia. He was taking prednisolone 3 mg/day, methotrexate 12 mg/week and folic acid 10 mg/day. He had a fever of 38.8°C two days prior to admission. On the day of admission, he developed worsening dyspnoea and was transported to our hospital by ambulance. His blood pressure was 106/83 mm Hg, heart rate was 90 beats per minute, body temperature was 36.3°C and oxygen saturation was 85% in room air. Fine crackles were audible throughout both lung fields. Chest CT and X-ray revealed bilateral diffuse ground-glass opacities in both lungs (figure 1A,B) and blood tests revealed high C-reactive protein (21.3 mg/dL), high lactate dehydrogenase activity (696 U/L) and high β-D glucan (152 pg/mL). On the basis of these findings, Pneumocystis carinii pneumonia with acute exacerbation of interstitial pneumonia was diagnosed.

The methotrexate administration was stopped because of a concern regarding the possibility of methotrexate-induced pneumonitis. Steroid pulse therapy (methylprednisolone 1000 mg/day for 3 days) with subsequent steroid therapy (prednisolone 80 mg/day) and trimethoprim–sulfamethoxazole were started on the day of admission. On the 12th day of hospitalisation, pneumomediastinum and subcutaneous emphysema were identified on chest CT scan and X-ray (figure 1C,D). Therefore, the dose of prednisolone was reduced to 60 mg/day and tacrolimus was started at a dose of 3 mg/day. The prednisolone dose was subsequently tapered by 5 mg per week. Although deterioration of the pneumomediastinum and subcutaneous emphysema were observed on further chest CT scan and X-ray obtained on the 26th day of hospitalisation (figure 1E,F), they subsequently gradually improved, such that on the 54th day of hospitalisation, these defects had almost disappeared on chest CT scan and X-ray (figure 1G,H).

Figure 1 Chest CT and X-ray images of the patient. (A) Chest CT image obtained on admission. Bilateral diffuse ground-glass opacities were noted in both lungs. (B) Chest X-ray image obtained on admission. Bilateral diffuse ground-glass opacities were noted in both lungs. (C) Chest CT image obtained on the 12th day of hospitalisation. Pneumomediastinum (thick arrow) and subcutaneous emphysema (thin arrows) were observed. (D) Chest X-ray image obtained on the 12th day of hospitalisation. Pneumomediastinum (thick arrow) and subcutaneous emphysema (thin arrows) were observed. (E) Chest CT image obtained on the 26th day of hospitalisation. Deterioration of the pneumomediastinum (thick arrow) and subcutaneous emphysema (thin arrows) was observed. (F) Chest X-ray image obtained on the 26th day of hospitalisation. Deterioration of the pneumomediastinum (thick arrow) and subcutaneous emphysema (thin arrows) was observed. (G) Chest CT image obtained on the 54th day of hospitalisation. The pneumomediastinum and subcutaneous emphysema had almost disappeared. (H) Chest X-ray image obtained on the 54th day of hospitalisation. The pneumomediastinum and subcutaneous emphysema had almost disappeared.
This is the first case of spontaneous pneumomediastinum with subcutaneous emphysema to be reported in a patient with rheumatoid arthritis and interstitial pneumonia. Tissue fragility induced by corticosteroid use and pulmonary vasculitis are considered to be risk factors for pneumomediastinum in patients with a collagen disease. P. carinii pneumonia has also been reported to be a risk factor for pneumomediastinum. Thus, in the present case, these factors might have contributed to the development of pneumomediastinum and subcutaneous emphysema. The early initiation of immunosuppressive agents has been recommended in patients with connective tissue disease-associated pneumomediastinum, in order to control the pulmonary vasculitis, along with swift tapering of the corticosteroid. Therefore, the patient was conservatively treated by tapering his dose of corticosteroid and the initiation of an immunosuppressant, following which his condition improved. Routine oxygen therapy remains controversial in patients with spontaneous pneumomediastinum.

In conclusion, we have reported a case of spontaneous pneumomediastinum with subcutaneous emphysema that developed in a patient with rheumatoid arthritis and interstitial pneumonia. His condition was improved by tapering off his corticosteroid and the administration of an immunosuppressant.

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Case reports provide a valuable learning resource for the scientific community and can indicate areas of interest for future research. They should not be used in isolation to guide treatment choices or public health policy.

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REFERENCES

Learning points
► Clinicians should be aware of the possibility of spontaneous pneumomediastinum with subcutaneous emphysema when they care for patients with rheumatoid arthritis and interstitial pneumonia.
► Tapering off corticosteroids and administration of an immunosuppressant might be effective against spontaneous pneumomediastinum with subcutaneous emphysema that developed in patients with rheumatoid arthritis and interstitial pneumonia.