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View Abstract

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TITLE: Pulmonary Embolism with Dermatomyositis as the First Symptom of Pulmonary Fibrosis: A Case Report

CURRENT TYPE: Pulmonary and Critical Care Medicine

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ABSTRACT BODY:

Learning Objective 1: Learn about the symptoms of pulmonary fibrosis and pulmonary embolism

Learning Objective 2: Learn the diagnosis and treatment of pulmonary fibrosis and pulmonary embolism

Case: A 76-year-old female was admitted to hospital because of "chest tightness and asthma for three months, which aggravated for half a month". In January 2022, the patient developed edema and erythema scattered all over the body. She went to the local hospital, and the rash subsided after antiallergic treatment with "cetirizine and ketotifen". In April 2022, the asthma gradually worsened, accompanied by orthopnea, and the edema of the face and lower limbs worsened. She went to the local hospital, and the routine blood test showed WBC10. $5^* 10^9$ /L; Lab results shows creatine kinase 420 U/L, LDH 541 U/L, troponin T0. 293 ng/ml; ECG showed sinus rhythm, incomplete right bundle branch block; blood gas analysis showed pH 7.059, PaCO2 33.2 mmHg, PaO2 56.4 mmHg; Chest CT showed two pneumonia changes with reticular changes in both lungs. After anti-infection, anti-platelet aggregation, anti-asthma and other nutritional support treatments, the edema of both lower extremities subsided, and chest tightness and asthma did not improve significantly, so she was transferred to our hospital for treatment. Physical examination: Dusky erythema all over the body, exposed areas. Gottron signs can be seen on the extensor surfaces of bilateral elbow joints. Inspiratory Velcro rales could be heard in both lung bases. Chest CT pulmonary Angiography showed embolism of two main pulmonary arteries, embolism of right upper pulmonary artery branches, consolidation of both lungs and cable shadow, slightly larger heart shadow, pericardial effusion, thickened pleura on both sides.

The diagnosis was pulmonary embolism, type I respiratory failure, pulmonary interstitial fibrosis with infection, and dermatomyositis. Subcutaneous injection of low molecular weight heparin calcium 4000 μ, twice a day, for 10 days in total, application after 72 hours of low-molecular-weight heparin calcium, warfarin 3 mg was started orally, once a day. When the international normalized ratio (INR) on day 9 and 10 was 2.3 and 2.5, low molecular weight heparin calcium was discontinued, and after 6 months of warfarin alone, it was adjusted according to the INR. The dosage of warfarin is to keep the INR at 2-3. Methylprednisolone 40 mg intravenously 24 days later changed to oral hormone decreasing dose, gamma globulin pulse therapy, cyclophosphamide 0.4 g intravenous injection twice a week, combined, sufficient dose, intravenous antibiotics and other treatments.

Discussion: All deaths from dermatomyositis were pulmonary interstitial fibrosis with infection and peripheral respiratory failure. Pulmonary interstitial fibrosis can occur at any stage of the course of dermatomyositis. According to reports, arthropathy, rash, and muscle weakness accounted for 66% of the complications. In this case, the patient had edematous erythema as the first symptom. Chest tightness and asthma were obvious at the first onset. Muscle enzymes were found to be significantly elevated, and only pulmonary fibrosis was considered, but dermatomyositis was not further considered as the cause of pulmonary fibrosis. The main treatment for dermatomyositis is glucocorticoid therapy. Those who are not sensitive to hormones can be combined with cyclophosphamide pulse therapy. During the period of cyclophosphamide, the liver and kidney functions are monitored. After treatment, the clinical symptoms are relieved, and PaO2 improved.

The symptoms of pulmonary embolism are changeable, and they are often accompanied by cardiovascular disease and other serious diseases, which can easily lead to misdiagnosis and missed diagnosis. Chest

tightness and asthma gradually aggravated, blood gas analysis showed hypoxemia or type I respiratory failure, electrocardiogram showed right axis deviation, incomplete right bundle branch block, and D-dimer was mostly greater than 500 μg/L , suggesting a possible pulmonary embolism. Chest CT pulmonary angiography is one of the diagnostic methods for pulmonary embolism. In the absence of hemodynamic compromise from pulmonary embolism, modern therapy relies heavily on heparin to achieve adequate anticoagulation, which prevents further thrombosis while allowing endogenous fibrinolysis to occur. Low molecular weight heparin is currently the recommended treatment for pulmonary embolism. During the application of heparin, we monitored the partial thrombin time (APTT) daily and the time of oral warfarin to monitor the INR. No bleeding occurred and good curative effect was obtained. It is a problem worthy of attention to improve the understanding of the causes of pulmonary fibrosis and pulmonary embolism to avoid misdiagnosis and missed diagnosis of dermatomyositis and pulmonary embolism.

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