Pulmonary Hemorrhage in a Patient with Multiple Myeloma

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Pulmonary hemorrhage is rarely presented in patients with multiple myeloma. Herein, we describe a 65-year-old man with newly diagnosed multiple myeloma developed severe pulmonary hemorrhage and acute hypoxic respiratory failure before receiving any treatment for myeloma. The bleeding was successfully treated with plasma exchange, and the respiratory condition recovered well. This case illustrates that multiple myeloma should be considered as one of the differential diagnosis of pulmonary hemorrhage.

Key words: pulmonary hemorrhage, multiple myeloma

Multiple myeloma is characterized by a clonal proliferation of malignant plasma cell(1), and the most common presentations include anemia, bone pain, hypercalcemia, and renal failure(2). However, complications such as overt bleeding in patients with multiple myeloma were rarely reported(3). Herein, we presented a rare case of pulmonary hemorrhage related to a newly diagnosed multiple myeloma and responded to plasma exchange.

Case Report

A 65-year-old man was admitted for anemia and low back pain. The laboratory tests showed the following results: total white blood cell 5800/μl (neutrophil 85%, eosinophil 3%, lymphocyte 8%, monocyte 3%), hemoglobin 7.0 g/dl, platelets 125,000/μl, serum creatinine 0.9 mg/dl, blood urea nitrogen 34 mg/dl, calcium 7.5 mg/dl, C-reactive protein 3.6 mg/dl (normal reference < 6 mg/dl), total protein 9.9 g/dl, serum albumin 1.9 g/dl, serum β2-microglobulin 2944 μg/l, immunoglobulin G 6000 mg/dl, immunoglobulin A 32.8 mg/dl, immunoglobulin M 13.1 mg/dl. There was no finding of rouleaux formation in the peripheral blood smear. Urinalysis showed 2+ protein and 1+ blood (15 cells/high power field). Aspiration and biopsy of bone marrow revealed plasma cell ratio 63%. Therefore, the diagnosis of multiple myeloma was established. However, acute onset of massive hemoptysis and dyspnea developed, and he received emergent intubation for acute hypoxic respiratory failure. Thus he was transferred to the intensive care unit (ICU). On ICU admission, his blood pressure was 126/58 mm Hg, pulse rate was 124/min, and his body temperature was 37.2℃. His respiratory rate was 26/min and the arterial oxygenation saturation at FiO₂ of 60% was 92%. Physical examinations were unremarkable except diffuse coarse crackle in bilateral lung fields. Chest radiography revealed diffuse pulmonary infiltrations (Fig. 1). Bronchoscopy examination showed gross
bleeding, and bronchoalveolar lavage fluid revealed hemosiderin-laden macrophages. There was no sign of pulmonary infection or plasma cell infiltrations of lung. No accumulation of amyloid in the biopsy with Congo red under polarized light from trachea and pulmonary parenchyma was identified and serum cryoglobulin was not detected. Under the impression of pulmonary hemorrhage due to multiple myeloma, we initiated a 3-day course of plasma exchange using fresh frozen plasma. He was also treated with thalidomide with prednisolone. After these treatments, pulmonary hemorrhage rapidly diminished and respiratory condition gradually improved. Successful extubation was performed on ICU day 5 and finally, he was discharged uneventfully two weeks later.

**Discussion**

The most common manifestations of multiple myeloma include anemia, bone pain, elevated creatinine, fatigue, generalized weakness, hypercalcemia and weight loss\(^4\). Additionally, some patients presented with paresthesias, hepatomegaly, splenomegaly, lymphadenopathy, fever, pleural effusion, pulmonary plasma cell infiltrations\(^4\). However, pulmonary hemorrhage or hemoptysis as the initial presentation in patients with multiple myeloma, such as our case is extremely rare\(^5-8\).

Despite hemoptysis has been reported as the initial presentation in some elevated-globulin diseases, such as tracheobronchial amyloidosis, cryoglobulinemia, and vasculitis\(^8-10\), pulmonary hemorrhage caused by multiple myeloma in our case was confirmed after excluding other plausible etiologies. Clinically significant bleeding is an unusual manifestation of multiple myeloma, and the key mechanism may be that the circulating monoclonal proteins causing the increasing of blood viscosity and impairment of platelet and coagulation function\(^3\). Plasma exchange by using
extracorporeal blood purification technique can remove large molecular weight substances, such as pathogenic autoantibodies, immune complex, cryoglobulins, and myeloma light chain from the plasma. In this report, plasma exchange was demonstrated to result in our patient’s successful recovery from pulmonary hemorrhage as the previous reported case. Although the optimal management of this rare complication remains unclear, plasma exchange may be a useful treatment modality in this clinical setting. However, further large-scale study is needed to clarify the usefulness of plasma exchange.

In conclusion, the present report indicates that pulmonary hemorrhage should be considered as one of the complications of multiple myeloma.

References


多發性骨髓瘤引起肺出血

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多發性骨髓瘤的病人罕見表現出肺出血症狀，此次我們提出一位65歲男性新診斷出多發性骨髓瘤，在未接受骨髓瘤治療前發展出嚴重的肺出血和急性低氧性呼吸衰竭。經過成功的血漿置換術治療後，出血和呼吸衰竭都改善了！此病例提供我們應該將多發性骨髓瘤也列為肺出血的鑑別診斷之一。

關鍵詞：肺出血，多發性骨髓瘤