Pulmonary Plasma Cell Granuloma Improves With Corticosteroid Therapy

Takuma Bando, M.D.; Masaki Fujimura, M.D., F.C.C.P.; Yatsugi Noda, M.D.; Jin-ichiro Hirose, M.D.; Goroku Ohta, M.D.; and Tamotsu Matsuda, M.D.

Two cases of pulmonary plasma cell granuloma that progressed after respiratory infectious disease are described. The men, 48 and 32 years old, were admitted to the hospital with blood-streaked sputum and mass or nodular shadow on chest radiograph. Close examination revealed that these tumors were plasma cell granulomas, which are known as postinflammatory pseudotumors. Biopsy specimens, obtained by way of transbronchial biopsy, demonstrated proliferation of mature plasma cells and infiltration of lymphocytes supported by granulation tissue, and there was no evidence of malignancy or tuberculosis. Although surgery is common in the treatment of pulmonary plasma cell granuloma, some cases relapse or invade the mediastinum. Therefore, we decided to treat these patients with prednisolone, 30 mg/d, an anti-inflammatory and immunosuppressive agent. Two or 4 weeks later, these tumors disappeared completely and they have never recurred. As middle-dosage corticosteroid therapy is not cytotoxic, it is useful for the treatment of pulmonary plasma cell granuloma, especially in multifocal, unresectable, and/or relapsing cases. (Chest 1994; 105:1574-75)

Plasma cell granuloma, a rare disease occurring as a pulmonary nodular lesion, was first reported in detail by Bahadori and Liebow. This disease occurs in all ages and frequently involves the lung and gastrointestinal tract. Histopathologically, it is characterized by proliferation of mature plasma cells and endothelial cells supported by a stroma of granulation tissue and by infiltration of lymphocytes and large mononuclear cells.

Although the lesion is histologically benign, some cases include subsequent malignancy or tuberculous lesions, extend into the mediastinum, or involve the mediastinal lymph nodes. Almost all of the patients undergo surgical treatment to differentiate the condition from malignancy, but rare cases have been reported in which patients respond to corticosteroid therapy. We present two patients with pulmonary plasma cell granuloma that occurred after airway inflammatory disease; they had good response to middle-dosage corticosteroid therapy.

*From the Departments of Internal Medicine (Drs. Bando and Noda), Radiology (Dr. Hirose), and Pathology (Dr. Ohta), Toyama Rosai Hospital, Uozu, Japan, and the Third Department of Internal Medicine (Drs. Bando, Fujimura, and Matsuda), Kanazawa University School of Medicine, Kanazawa, Japan. Reprint requests: Dr. Bando, 3rd Department of Internal Medicine, Kanazawa University School of Medicine, 13-1 Takaramachi, Kanazawa 920, Japan

FIGURE 1. Chest computed tomographic scan at the time of hospital admission of case 1 showed a mass shadow with clear margin in the left lower lung field. There was no mediastinal lymphadenopathy.

CASE REPORTS

CASE 1

A 48-year-old man was admitted to the hospital in March 1992 with blood-streaked sputum and an abnormal shadow on chest radiograph. He was well until January 1992, but the first week in February, he caught a common cold; nonproductive cough, sore throat, and night sweating developed. There were no other symptoms such as high fever or body weight loss, and there was no change in activity. His medical or family history was not remarkable. Results of the physical examination were entirely unremarkable. The chest radiograph and chest computed tomographic (CT) scan at the time of hospital admission (Fig 1) revealed a mass lesion in the left lower lung field with clear margin. No mediastinal lymph nodes were swollen. Serologic tests revealed mild inflammatory change and erythrocyte sedimentation rate was accelerated. Serum tumor markers were not elevated. Bronchoscopically, fresh bronchial bleeding was not observed, and...
biopsy specimens obtained from the mass lesion presented the concentration of mature plasma cells and lymphocytes supported by granulation tissue. By way of immunohistochemical examination, these plasma cells were enclosed to present polyclonal proliferation: IgG (+), IgM (+), IgA (+). The patient was administered prednisolone, 30 mg/d, and 2 weeks later, the mass lesion of plasma cell granuloma disappeared except for marginal fibrotic change on chest radiograph and chest CT scan (Fig 2). Serologic inflammatory reaction changed to negative. Also, transbronchial biopsy specimen revealed only a nonspecific inflammatory change. During and after the steroid therapy, recurrence was not detected.

**Case 2**

A 32-year-old man was admitted to the hospital in May 1992 with productive cough and high fever with shaking chills. He had suffered from gastric ulcer and administered H2-antagonist (Famotidine, 40 mg/d) every day. Because serologic tests revealed marked inflammatory change and chest radiograph showed an infiltration in the right middle and lower lung fields with air bronchogram, we diagnosed his condition as pneumonia and treated it with piperacillin, 4 g/d. Seven days later, serologic test results changed to negative and the infiltration disappeared; however, a nodular lesion with clear margin and central cavitation appeared in the right lower lung field on chest radiograph and chest CT scan without any mediastinal lymphadenopathy. Because bronchoscopy and immunohistochemical examination revealed that this case was polyclonal plasma cell granuloma with no malignancy or tuberculosis, we started middle-dosage corticosteroid therapy (prednisolone, 30 mg/d) every day. Two weeks later, the central cavity enlarged and tumor size reduced; after 2 more weeks, the cavitory nodule completely disappeared. Recurrence was not detected after steroid therapy.

**Discussion**

Pulmonary plasma cell granuloma is a rare benign disease that affects all ages, but predominantly younger patients; Bahadori and Liebow1 described 40 patients, two thirds of whom were younger than 30 years old, and one third of whom were younger than 20 years old. The usual symptoms are cough, chest pain, dyspnea, fatigue, and/or weight loss. The etiology of plasma cell granuloma is unknown, but some cases developed associated with malignancy or tuberculosis as satellite lesions.

This lesion has been referred to by various names such as xanthoma, fibroxanthoma, or xanthogranuloma. It is also named postinflammatory pseudotumor, because it develops associated with inflammatory disease of the lung and apparently it looks like a tumor lesion. In 1984, Spencer6 reported the cases of plasma cell granuloma of the lung progressed to histiocytoma, as a disease category of pulmonary plasma cell/histiocytoma complex. Almost all the cases are regarded as benign, but some have a potentially malignant character, that is, extension to mediastinum,7 large vessels,8 or thoracic vertebra,9 while histologically these lesions contain no malignant cells.

The standard treatment for plasma cell granuloma has been surgery in order to differentiate it from malignancy,10 but some patients suffer relapse after the initial resection.11 It is necessary for us to select noninvasive therapy. Hoover et al12 reported a case of unresectable plasma cell granuloma that disappeared after the radiation therapy—4,040 cGy in 19 fractions; Imperato et al13 described two patients in whom the lesions could not be completely resected, but they were successfully treated with radiation—4,500 cGy in 28 fractions and 4,320 cGy in 180-cGy fractions. However, the other case reported by Mehta et al,14 complicating chronic obstructive pulmonary disease, presented inadequate response to radiation—1,800 cGy in 200-cGy fractions and 3,000 cGy in 300 cGy fractions.

On the other hand, medical treatment is not popular, so the effect of corticosteroids on plasma cell granuloma is still unknown. Although Bahadori and Liebow1 reported that the short-term administration of corticosteroids was not effective, two cases have been reported with good response to corticosteroids in Japan.45 These patients were treated with oral corticosteroids (prednisolone, 40 mg or 60 mg/d) for more than 4 weeks. To our knowledge, there have been only two reports about the response to the long-term administration of corticosteroids, except our two cases. Now we present two patients with plasma cell granuloma who remarkably responded to the long-term and middle-dosage corticosteroid therapy. Although these patients might have had resectable conditions at the time of hospital admission, upper (case 1) and lower (case 2) respiratory infectious disease preceded and no malignancy or tuberculosis was suspected; therefore, we selected corticosteroid therapy. It is recommended that corticosteroid therapy may be effective for pulmonary plasma cell granuloma, especially in unresectable, multifocal, and/or relapsing cases.

**References**