Laser Treatment of Endobronchial Extramedullary Plasmacytoma*

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A 68-year-old man presented with an endobronchial lesion and was subsequently found to have a plasmacytoma. After systemic involvement with multiple myeloma was ruled out, a diagnosis of extramedullary plasmacytoma was made. The diagnosis and treatment of extramedullary plasmacytoma is discussed with specific attention to the new role of laser therapy in this disease.

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EMP=extramedullary plasmacytoma

Extramedullary plasmacytoma (EMP) is a plasma cell neoplasm that arises outside the bone marrow and was once considered to be a myeloma variant. The diagnosis of EMP is made by the following: (1) the presence of a plasma cell tumor, proven by biopsy specimen; (2) a bone marrow specimen showing fewer than 10 percent plasma cells; and (3) the absence of systemic signs and symptoms associated with multiple myeloma such as anemia, hypercalcemia, and bone pain. Approximately 25 percent of cases have serum or urine M-protein; however, the levels detected are generally much less than in multiple myeloma. Unlike multiple myeloma, EMP is a limited disease and can usually be cured by local resection or irradiation.

Most (78 to 85 percent) EMPs are located in the nasopharynx and upper respiratory tract, arising from submucosal lymphoid tissue. Primary pulmonary plasmacytoma is exceedingly rare and only a few case reports have described EMP with endobronchial growth. The present case illustrates a rare endobronchial presentation of EMP with unique laser treatment.

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CASE REPORT

A 68-year-old man complained of a 1-year history of mildly productive cough and progressive dyspnea on exertion. He denied weight loss or hemoptysis but he has a significant smoking history and worked in a mattress factory for 20 years with cotton and dust exposure. The physical examination was remarkable for no abnormalities of the head and neck, diffuse scattered wheezing, more prominent on the left, and no lymphadenopathy.

Laboratory studies included a normal CBC, serum calcium, and urine electrophoresis. The serum protein electrophoresis showed a slight increase in protein in the gamma region with no apparent monoclonal protein. The serum immunoelectrophoresis was normal. The chest radiograph showed left hilar fullness, a left lower lobe infiltrate, and normal ribs. Chest computed tomographic scan revealed mediastinal adenopathy, extensive chronic infiltrates in the left lower lobe, and an intraluminal mass, approximately 1 cm in diameter, in the left mainstem bronchus (Fig 1). Bronchoscopy confirmed the presence of an obstructing lesion of the left mainstem bronchus (Fig 2).

Biopsy specimen of the endobronchial polypoid lesion revealed a densely cellular neoplasm composed of monomorphic cells with eccentric round, dark stained nuclei. A perinuclear clear zone was observed in a significant proportion of tumor cells. Immunoperoxidase studies showed the tumor cells to be a clonal expansion of lambda light chain positive lymphoid cells. The tumor cells were negative for chromogranin, the epithelial markers, low-molecular-weight cytokeratin, AE1 and AE3, and showed focal positivity for epithelial membrane antigen. These pathologic findings are consistent with plasmacytoma. Mediastinoscopy and lymph node biopsy specimen revealed normal pretracheal and carinal lymph nodes. There were fewer than 10 percent plasma cells on bone marrow biopsy specimen. The patient was diagnosed as having solitary EMP. The lesion was ablated using an Nd-YAG laser and had further photoagulation and vaporization of the base of the lesion 1 month later. Since laser therapy, the patient remains asymptomatic and without evidence of disease recurrence.

DISCUSSION

Our patient represents only the third reported case of primary endobronchial EMP and the first one (to our knowledge) in which laser therapy was applied. Of the two...
previously published cases, one patient had an endobronchial EMP of the bronchus intermedius that was treated with lung resection without recurrence of disease at 2 years. The other patient had resection of a polypoid endobronchial EMP using rigid bronchoscopy, followed by irradiation and chemotherapy without recurrence at 6 months. All other published cases of endobronchial or endotracheal EMPs were associated with multiple sites of involvement or were the result of local extension by a pulmonary parenchymal EMP.

Most cases of primary pulmonary plasmacytoma are diagnosed during or after thoracotomy and, therefore, are treated by surgical resection of the pulmonary mass. Surgical excision has generally led to good results but reported cases are few and follow-up is variable. In a recent review of 19 cases of primary pulmonary plasmacytoma, 3 patients received radiation alone, 3 had surgery and radiation, 2 had surgery and chemotherapy, and 11 had surgery alone. There were insufficient follow-up data to make a conclusion about the optimal treatment.

In extrathoracic EMP, the recommended treatment is either local surgical excision or irradiation. A radiation dose of 40 to 50 Gy is commonly used. Recurrent EMP or the development of a new lesion is treated with a repeated course of radiation or chemotherapy. The chemotherapy regimen is the same as that used for multiple myeloma and may include melphalan, cyclophosphamide, carbustine, lomustine, doxorubicin, or glucocorticoids.

All patients with EMP should have very close observation after treatment to detect any sign or symptoms of systemic disease or progression to multiple myeloma. In cases in which there is an M-protein present in the serum or urine, it should normalize following treatment and can be used as a marker for recurrent disease. Estimates in the literature for progression of EMP to multiple myeloma range between 0 and 33 percent. The higher estimate probably reflects failure to detect systemic disease at the time of diagnosis.

To our knowledge, this is the first documented case of the treatment of EMP by laser ablation. Surgical therapy, although curative, causes significant morbidity as well as loss of pulmonary parenchyma. In the patient with chronic obstructive pulmonary disease, such as this patient, laser therapy causes minimal morbidity as well as total preservation and improvement in pulmonary function. Laser therapy should be considered in patients with endobronchial plasmacytomas.

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Figure 2. Endobronchial view of the obstructing lesion of the left mainstem bronchus.