Fibrosing mediastinitis (FM) is a rare benign disorder caused by the proliferation of acellular collagen and fibrous tissue within the mediastinum (Rossi et al. 2001). Although many cases of FM are idiopathic, a large number of patients in the United States are associated with abnormal immunologic responses to Histoplasma capsulatum infection (Rossi et al. 2001). FM is known to cause several serious complications, including pulmonary artery occlusion, bronchial stenosis, superior vena cava syndrome, and constrictive pericarditis, whereas chylothorax is not a common manifestation of FM (Tutor et al. 2000; Fernandez et al. 2009). There is no standard treatment for FM or chylothorax (Romero 2000; Rossi et al. 2001; Kalomenidis 2006). Although somatostatin and octreotide, a somatostatin analogue, were successfully used for the treatment of chylothorax due to various causes, there is no standard treatment for FM or chylothorax. Recently, however, somatostatin and octreotide, a somatostatin analogue, were successfully used for the treatment of chylothorax due to various causes, and they are considered as putative therapeutic interventions for chylothorax. Here, we present a 28-year-old Japanese man with chylothorax due to idiopathic FM, who was successfully treated with octreotide. The patient visited our hospital because of dyspnea on exertion. On admission, chest computed tomography revealed pericardial effusion, bilateral pleural effusion, and a mass in the mediastinum. The right pleural effusion appeared chylous, with the triglyceride level of 253 mg/dl. The biopsy specimen from the mediastinal mass showed collagenous fibers and fibroblasts with moderate infiltration of lymphocytes. Neither fungi nor bacteria were cultured from the biopsy specimen. Steroid therapy was not effective. The patient was then treated with subcutaneous octreotide (100 μg three times daily). Five days after starting the treatment, the drained pleural fluid was decreased to ~150 ml/day from ~1,000 ml/day. The mediastinal mass decreased in size 2 weeks after the initiation of octreotide treatment. After discharge, the patient has received octreotide treatment for 6 months without serious adverse events. We suggest octreotide as a treatment option for FM.

Keywords: Fibrosing mediastinitis; Chylothorax; Octreotide; antifibrotic activity; somatostatin

In the present patient, immunostaining for IgG4 showed no IgG4-positive plasma cells and serum IgG4 was not elevated (20.9 mg/dl) and also retroperitoneal lesion was not observed. The biopsy specimen showed no fungi and neither fungi nor bacteria were cultured from the biopsy specimen. Both histoplasmosis antigen and antibody were negative. The QuantiFERON-TB Gold Test was also negative. Thus, FM in the present patient was thought to be idiopathic.

In spite of diet treatment with low fat, limited oral intake, and medium chain triglycerides, approximately 1,000 ml/day chylous pleural fluid was drained for 1 week. Although prednisolone (1 mg/kg/day) was administered for 2 weeks, the pleural fluid did not decrease and the mediastinal mass did not become smaller. Prednisolone was then decreased and he was treated with subcutaneous octreotide (100 μg three times daily). Five days after starting the treatment, the drained pleural fluid had decreased to approximately 150 ml/day but the amount of pericardial effusion was stable. In addition, the mediastinal mass was slightly smaller 2 weeks after starting the treatment (Fig. 1b). After discharge, he has continued to receive octreotide treatment for 6 months without serious adverse events.

**Discussion**

Although spontaneous chylothorax has been described in patients with thoracic duct obstruction secondary to sarcoidosis, Kaposi’s sarcoma, and lymphoma, few cases of chylothorax due to FM have been reported (Romero 2000; Tutor et al. 2000; Fernandez et al. 2009). Somatostatin and octreotide, a somatostatin analogue, have been reported to decrease chyle production in spontaneous chylothorax, congenital chylothorax, and chylothorax due to surgical thoracic duct injury or malignancy (Kalomenidis 2006). Somatostatin is a polypeptide that inhibits release of various hormones, for example, growth factor and insulin, and inhibits lymph fluid production (Lamberts et al. 1996). In the gut, somatostatin is known to reduce both splanchnic blood flow and the intestinal secretion of electrolytes and water. Evidence from experimental studies showed a marked decrease in thoracic secretion of electrolytes and water. Evidence from experimental studies showed a marked decrease in thoracic lymph flow after administration of somatostatin (Markham et al. 2000). To the best of our knowledge, this is the first report in which octreotide was effective for chylothorax due to FM. We adopted subcutaneous octreotide at a dose of 100 μg three times daily according to a previous report of the chylothorax due to lymphoma (Lahlou et al. 2003). Interestingly, the mediastinal mass became slightly smaller after starting octreotide treatment. Somatostatin and its analogues displayed antifibrotic activities in vitro and in vivo in different experimental
settings (Gunal et al. 2001). The pathways involved in this antifibrotic effect have not been completely elucidated, but inhibition of transforming growth factor beta production as well as a degree of anti-inflammatory action may contribute to the protective effect (Gunal et al. 2001; Wang et al. 2001; Valatas et al. 2004). Although the remission in the present patient might have been spontaneous, considering the antifibrotic properties of somatostatin, we propose that the remission might have been due to octreotide treatment.

FM often has an unpredictable course, with both spontaneous remission and exacerbation of symptoms being reported (Loyd et al. 1988; Sherrick et al. 1994). Presuming that FM is related to histoplasmosis and an ensuing inflammatory reaction, some investigators have treated patients with systemic antifungal agents or corticosteroids. Most available data in this regard are based on either case reports or a small series. Most studies have shown little or no beneficial effect of steroid therapy (Rossi et al. 2001). In our patient, since he had been to the United States, the etiology of FM was also suspected as histoplasmosis; however, no evidence was detected. He was therefore diagnosed with idiopathic FM and steroid therapy was not effective.

In our patient, chylothorax associated with FM was successfully treated with octreotide. In addition, the mediastinal mass became slightly smaller after starting octreotide treatment. Although this might have been spontaneous remission, considering its anti-fibrotic properties, octreotide could also become a treatment option for FM.

Conflict of interest statement

We declare that we have no potential conflicts of interest related to the article.

References


