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Case Report:

A case of chylothorax treated curatively with Sapylin, a streptococcus preparation*

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Abstract: Chylothorax is an uncommon disease where fatty fluid accumulates within the chest cavity. Conservative management, including repeated thoracentesis or pleurodesis, seems to be suitable to most cases. Herein, we present a case of efficacious pleurodesis by intrapleural injection of Sapylin, a streptococcus preparation, for the treatment of chylothorax. A 52-year-old non-smoking female farmer was diagnosed as idiopathic chylothorax after we ruled out possible causes including chest trauma, lymphoma, lung cancer, filariasis, tuberculosis, and etc. Two-time intra-thoracic injection of 3 Klinische Einheit (KE) Sapylin achieved rapid and effective control of chylothorax with no severe side effects. Sapylin may facilitate pleurodesis by producing a strong inflammatory response.

Key words: Chylothorax, Sapylin, Streptococcus preparation
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INTRODUCTION

Chylothorax refers to the presence of fatty fluid (chyle) with increased triglyceride levels in the pleural space, secondary to leakage from the thoracic duct or one of its main tributaries. Patients with chylothorax can be normally treated by conservative therapy or surgery. Some agents such as bleomycin, talc, and tetracycline have been used in pleurodesis (Dikensoy and Light, 2005; Tan *et al*., 2006). However, the streptococcus preparation was rarely reported in the treatment for chylothorax. Here, we present a case of efficacious pleurodesis by intrapleural injection of Sapylin, a streptococcus preparation, in a patient with chylothorax.

CASE REPORT

A 52-year-old non-smoking female farmer was hospitalized because of chest distress for 4 months. She had no cough, bloody sputum, chest pain, fever and also no history of chest trauma. Physical examination showed the respiratory sound of right lung degraded remarkably. Ultrasound and X-ray examination showed massive right pleural effusions. Thoracentesis was performed and the level of triglyceride of pleural fluid was 1104 mg/dl whereas cholesterol concentration was 64 mg/dl. Our findings indicate a chylothorax. Pulmonary computed tomography (CT) scan, pleural biopsy and brochoscopy revealed no important finding. Other examinations including schistosoma antibody, cysticercus specific antibody, acid-fast bacilli of sputum and microfilaria of peripheral blood had no positive results. "Idiopathic chylothorax" was designated after we ruled out all possible causes including chest trauma, lymphoma, lung cancer, filariasis, tuberculosis, and etc. The chest tube was inserted and fat-free diet was given for 2 weeks. But these managements seemed to have no effect and draining volume of chyle remained more than 1000 ml daily. Therefore, 3 Klinische Einheit (KE) of Sapylin with 50 mg lidocaine and 10 mg

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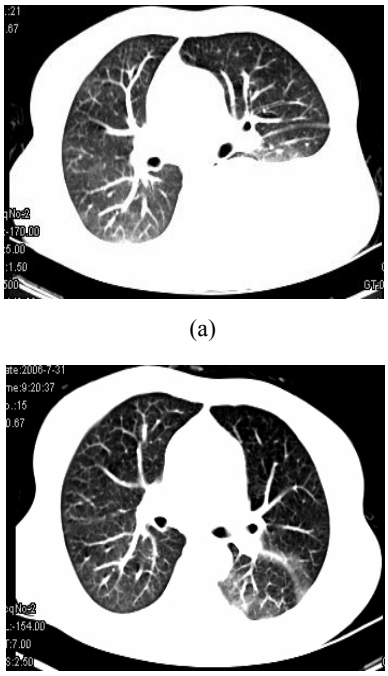
dexamethasone in 50 ml of physiological saline was injected into the right pectoral cavity via chest tube. The chest tube was clamped and the patient was repositioned every 30 min for 4 h. The volume of chylous fluid decreased gradually from 1000 ml to 100 ml daily within 5 d. An additional 3 KE of Sapylin was administered subsequently. There was no chyle again after the second injection. She was discharged after 3 d of observation and the chest radiograph revealed no effusion (Fig.1). Ultrasound examination also revealed no reaccumulation of chylothorax during 6 months follow-up.



(a)

(b)

Fig.1 Pulmonary computed tomography (CT) scan before (a) and after (b) treatment of Sapylin showed that this case with chylothorax was successfully treated by intrapleural injection of Sapylin

DISCUSSION

Chylothorax is a relatively uncommon disorder whose etiopathogenisis is divided into traumatic chylothorax and non-traumatic chylothorax, and the latter includes tumor, filariasis, tuberculosis, and etc. However, some cases still have no clear cause, so idio-chylothora is designated. Patients with chylothorax can be treated by conservative therapy or surgery. Sometimes radiotherapy may promote resolution of chylothorax and should be used in patients with malignant chylothorax who are not surgical candidates (Duffy *et al*., 2005). Conservative management, including repeated thoracentesis or pleurodesis, seems to be suitable to most cases (Jimenez *et al*., 2007). Pleurodesis has been successfully implemented using various agents such as bleomycin, talc, tetracycline, thrombin, and etc. However, other local and systemic side effects, such as pulmonary fibrosis with bleomycin, make most sclerosants unsatisfactory forms of treatment (Laranne *et al*., 2002).

Sapylin, made in Lukang Pharmaceutical Co., China, is a lyophilized biological preparation of streptococcus (strain 722) treated with penicillin. 1 KE of Sapylin contains 0.1 mg of dried cocci. Sapylin is an analogue of OK-432 (Picibanil, Chugai Pharmaceutical Co., Tokyo), which has been used in Japan primarily as immunotherapy for malignant tumors and lymphangiomas. The streptococcus preparations can activate natural killer cells and T cells, as well as inducing the production of cytokines such as tumor necrosis factor, interleukin-6, vascular endothelial growth factor and transforming growth factor β_1. Therefore, the intrathoracic injection of these agents promotes the development of fibrin clots, and this is thought to facilitate pleurodes (Ogita *et al*., 1996; Fujino *et al*., 2003). Sapylin/OK-432 produces an inflammatory reaction leading to the destruction of the epithelial lining and the subsequent sclerosis and cicatricial contraction of the lesion, too. It is reported that after continuous aspiration of pleural effusion and the infusion of 10 KE of OK-432 into the pleural cavity, the chylothorax of lymphangioleiomyomatosis disappeared (Adachi *et al*., 2004). In addition, patients with chylothorax due to the right pulmonary transplantation and lung cancer were successfully treated by intra-thoracic infusion with streptococcus preparations (Koga *et al*., 1999; Fujimura and Kondo, 2000). Shimizu *et al*.(1994) demonstrated that six adult patients with chylothorax after chest surgery showed an improvement without the need for thoracic duct ligation by intra-pleural injection of 0.1~0.5 mg of OK-432.

In the present report, the patient with idiopathic chylothorax was successfully controlled by two-time intra-thoracic infusion of 3 KE Sapylin. Sapylin injection achieved rapid and effective control of pleural

effusions with no severe adverse effects. The common side effects of streptococcus preparations reported in previous studies were fever and a local inflammatory reaction. Pleurodesis by intra-pleural injection of OK-432 was even used for the treatment of fetal chylothorax, showing no teratogenicity or fetal toxicity (Tsukihara *et al*., 2004).

In summary, pleurodesis with intrapleural injection of Sapylin, a streptococcus preparation, could be an effective treatment for chylothorax. However, more cases in randomized studies need to be further observed.

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