Bilateral chylothorax after thymectomy via median sternotomy and resolution through conservative treatment

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Abstract

Thymectomy has been shown to be effective in the treatment of myasthenia gravis patients. Rarely, bilateral chylothorax, was noted as a complication of thymectomy via median sternotomy. Probably unseen division of mediastinal lymphatics, remote from thoracic duct, can explain this phenomenon. We report the case of a patient, female, who developed bilateral chylothorax after the former surgical approach, and our initial conservative policy to treat it (unilateral chest tube, total parenteral nutrition and subcutaneous administration of octreotide, a long-acting somatostatin analog), with good results.

Keywords: Chylothorax; Thymectomy; Myasthenia; Sternotomy; Octreotide; Drainage

1. Introduction

Leak of lymphatic fluid is a rare but embarrassing complication of thoracic surgery, indeed difficult to treat, and it results most of the time in an expensive, prolonged in-hospital stay. Although chylothorax can occur following intrathoracic surgical procedures, it is a rare complication of thymectomy via median sternotomy, and has been scarcely reported [1,2].

Early diagnosis and treatment of chylothorax is urged due to the consequences on metabolism and respiratory conditions. Approximately 25–50% of patients will then require surgical treatment with a mortality of 21% [3]. If one does not specifically look for it, chylothorax is really difficult to notice during the surgical procedure because of reduced lymph flow and pressure, so attention should be paid during the extended thymectomy. We report the case of prompt cessation of lymphorrhea in an adult patient using conservative treatment, thus it was possible to avoid an operation.

2. Case report

Female, 49 years old, suffering from myasthenia gravis IIa, with pharmacological oral treatment (prednisone, 10 mg/24 h and piridostigmine, 60 mg/24 h), included in waiting list for surgical approach. She underwent an extended thymectomy via median sternotomy. Both thymic upper poles were found behind the left innominate vein, and an extensive dissection was carried out to remove all the thymic tissue at the thoracic inlet. The conditions of the procedure were uneventful, and during the procedure, no chylous leak was noted. To complete removal of thymic tissue a ‘mediastinal window’ existed, presumably connecting both pleural spaces.

After removal of the chest tubes, the patient became short of breath. A chest X-ray revealed a bilateral pleural effusion, more important in the right side (Fig. 1). A new right thoracic drainage was inserted, and 1800 mL of ‘milky’ fluid (seemed to be chyle) evacuated. The biochemical examination confirmed the diagnosis of chylothorax (triglycerides, 1640 mg/dL and total cholesterol, 89 mg/dL). We consider that a single chest drainage under low aspiration (−10 cm H2O) in the more affected side, would be enough as a ‘mediastinal anterior window’ existed, presumably connecting both pleural spaces.
time, a central venous catheter had been installed and a total parenteral nutrition (TPN) was initiated. Additionally, we decided to administer subcutaneous octreotide (Sandostatin; Novartis AG; Basel, Switzerland), 100 mg/8 h. Treatment was continued for a total of 13 days. The patient was maintained in the fasting state, and required to adopt different positions.

The patient promptly responded to this conservative therapy. The fluid outflow through the thoracic drain dropped from approximately 600 to 100 or less mL/day, and the aspect became watery. On chest radiography, both lungs were fully reexpanded (Fig. 2). We reintroduced the oral diet, with normal content of fat, maintaining the pleural drainage, and we observed the patient during 3 days. In this period, the amount of the pleural fluid and the chest-X-ray seemed to be similar as before, so the chest tube was removed on the 11th day since its insertion. No adverse effect of the drug was observed during or after treatment. Measurement of the glucose blood level three times per day did not show any disturbance. The patient was discharged the 15th day from the beginning of the treatment, with an oral intake containing medium chain triglycerides. Two months after the initial operation, she takes a normal diet, and the standard chest radiograph is unremarkable.

3. Discussion

Rarely, bilateral chylothorax, was found as a complication of thymectomy via median sternotomy [1]. Chylothorax results from a tear or rupture of the thoracic duct, or the inadvertent division of mediastinal lymphatics [2]. The prevalence of postsurgical chylothorax ranges from 0.5 to 2.0% in pulmonary resections. It reaches 2.2% when the procedures are performed in the vicinity of the thoracic duct such as esophagectomies [4]. This complication is often difficult to control by non-surgical management and probably requires thoracic duct ligation [3]. Chylothorax as a complication following thymectomy via median sternotomy, develops from small mediastinal lymphatic channels and usually responds to chest tube drainage.

Our policy was conservative (cessation of oral intake, insertion of a chest drain in the more affected side and TPN through central venous catheter). As ‘extended’ thymectomy usually creates a ‘mediastinal window’ between both pleural spaces, the evacuation of the chyle by unilateral drainage is possible [2]. Additionally we introduced subcutaneous administration of octreotide. Octreotide is a long-acting synthetic somatostatin analogue, and can be administered subcutaneously in two to three divided doses per day, reducing lymph flow rate and acting directly on vascular somatostatin receptors to minimize lymph fluid excretion [5,6]. Some authors have reported that gastrointestinal secretory volume and enzymes are decreased by the octreotide. Also, it blocks pancreatic and biliary secretion, so less volume is offered for absorption and flow into the thoracic duct.

Because of the advantage of subcutaneous administration, we decided to administer octreotide, while somatostatin demands continuous endovenous infusion. We agree with other authors that successful treatment of chylothorax with octreotide can be confirmed in children [7], but we thought that the same mechanism would work for adults.

Although chylothorax is encountered more frequently with certain thoracic operations, it is considered to be a rare complication of thymectomies via median sternotomy [1,2,8]. We think thoracic duct was not concerned (in that case a massive chylous leakage would be present), so the most likely option is that small mediastinal lymphatics were damaged during dissection of the perithymic tissue, although during the surgical procedure no chylous leak was noted.

Attention should be paid during dissection at the surgical procedure, and the operating field should be checked for any lymph leak. In the postoperative period, the clinician should suspect chylothorax if the patient had respiratory embarrassment, especially in case of a bilateral pleural effusion.
The biochemical examination must confirm the diagnosis. Chylothoraces can be managed conservatively during 10–14 days. Sometimes conservative treatment fails because the chest tube drainage is consistently greater than 500 mL per day during 10–14 days, or existed from the beginning a massive chylic leakage (5–6 L/day of drainage fluid). Then thoracic duct ligation through a right thoracotomy or thoracoscopic approach, and in some cases transabdominal ligation of the cisterna chyli, should be done before complications set in. We would prefer ligation of the thoracic duct by using non-absorbable suture material, just above the diaphragm, regardless of the site of the chylous leak. A parietal pleurectomy or pleurodesis with talc can be performed at the same time.

References