Korean J Thorac Cardiovasc Surg 2015;48:225-227 □ Case Report □
ISSN: 2233-601X (Print) ISSN: 2093-6516 (Online) http://dx.doi.org/10.5090/kjtcs.2015.48.3.225

Aberrent Thoracic Duct Cyst in Postrior Mediastinum

Soo Jin Park, M.D., Seonng Yong Park, M.D., Ho Choi, M.D.

Thoracic duct cysts in the upper portion of the diaphragm are mostly found in the neck and are rarely found in the mediastinum. Thoracic duct cysts should be differentiated from other mediastinal tumors or cysts, and surgical treatment is required to avoid the development of chylothorax if the cyst ruptures. Herein, we report the case of a patient with a thoracic cyst located just above the diaphragm that was treated with surgical resection.

Key words: 1. Thoracic duct
2. Mediastinal neoplasms
3. Chylothorax
4. Thoracoscopy
5. Thoracic surgery, video-assisted

CASE REPORT

A 42-year-old female patient received inpatient treatment for acute pyelonephritis in 2003. In 2009, she was diagnosed with gastroesophageal reflux disease and began taking prescription medication for that condition. During a regular follow-up examination, a chest X-ray revealed a mass lesion in a portion of the left lower lung field. Chest computed tomography was then performed, and the patient was suspected of having a neurogenic tumor or bronchial cyst in the left posterior mediastinum (Fig. 1A, B). The patient was then admitted for surgical diagnosis and treatment.

At the time of admission, laboratory tests showed no remarkable findings. Thoracoscopic resection of a portion of the posterior mediastinal mass was performed under general anesthesia in the right lateral decubitus position under single lung ventilation on the right side. The lesion was a sessile cyst-like mass fixed to the posterior mediastinum. During dissection, the cyst wall was opened and a milky-white leaking fluid was observed. No serious adhesion to the surrounding tissue was found, and the lesion seemed benign during intraoperative observation. The operation was finished after a pathology report on the resected lesion was requested. The pathology report indicated that the lesion was composed of interconnected and dilated lymphatic spaces, lined by a single attenuated layer of endothelial cells (Fig. 2).

Post-surgical thoracic drainage remained high, with 420 mL of drainage on the first postoperative day. On the second day, 110 mL of the milky pleural fluid was drained. Laboratory examination of the pleural fluid revealed that the fluid was chylothorax, containing 842 mg/dL of triglycerides and 75 mg/dL of total cholesterol. Thereafter, conservative treatment was started, combining fasting and total parenteral nutrition. However, after one week of conservative treatment, the chylothorax continued to leak. More than 900 mL of pleural effusion was drained daily. The resected mediastinal mass was

Department of Thoracic and Cardiovascular Surgery, Ajou University School of Medicine, Suwon, Korea
Received: August 13, 2014, Revised: November 3, 2014, Accepted: November 4, 2014, Published online: June 5, 2015
Corresponding author: Ho Choi, Department of Thoracic and Cardiovascular Surgery, Ajou University Hospital, Ajou University School of Medicine, 164 World cup-ro, Yeongtong-gu, Suwon 443-380, Korea
(Tel) 82-31-219-5210 (Fax) 82-2-2228-2140 (E-mail) choiho@ajou.ac.kr

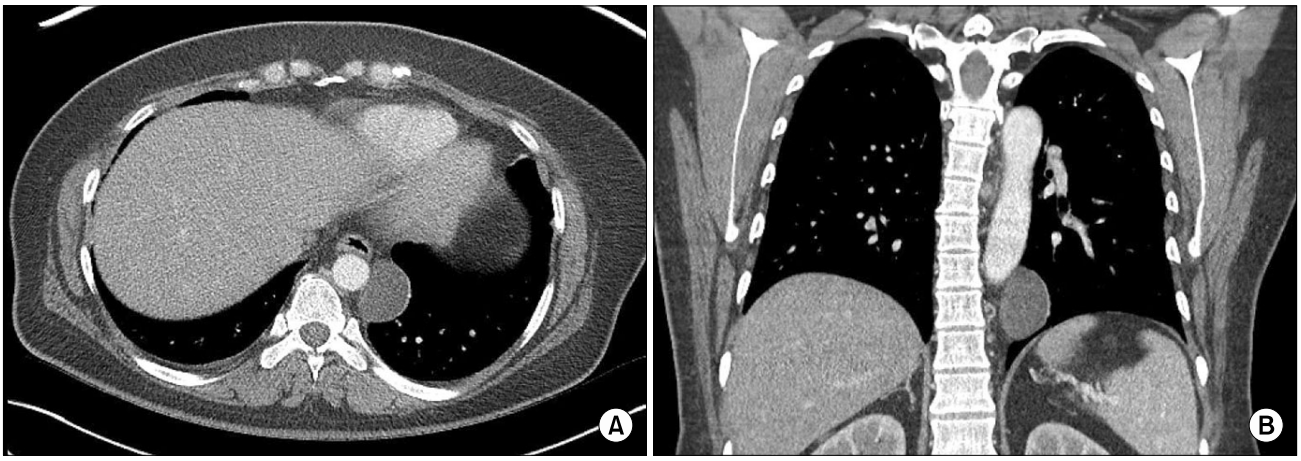

Fig. 1. Preoperative computed tomography images showing the mediastinal mass located at the level of the left diaphragm. (A) Axial view. (B) Coronal view.

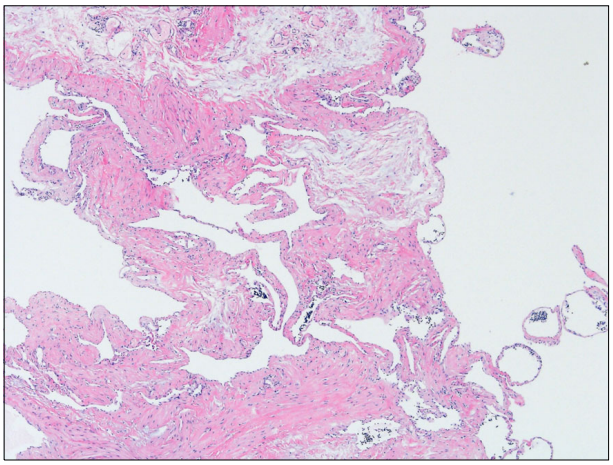

Fig. 2. Hematoxylin and eosin staining of the surgical specimen (×40). The lymphatic spaces are interconnected and dilated, and are lined by a single attenuated layer of endothelial cells.

confirmed to be a cystic lymphangioma in the final pathology report. Considering the clinical presentation of chylothorax after the operation and the pathologic confirmation of the resected mediastinal mass, the mediastinal mass was diagnosed as a thoracic duct cyst. Seven days after the initial operation, the patient underwent reoperation to ligate the thoracic duct by video-assisted thoracoscopic surgery and talc pleurodesis under general anesthesia (Fig. 3). The patient ingested 200 mL of olive oil to identify the thoracic duct leaks before reoperation. After reoperation, normal meals were administered, and no chyle drainage was observed. The patient

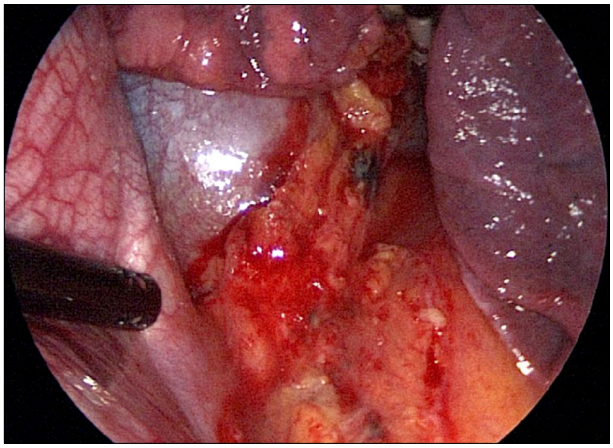

Fig. 3. Intraoperative findings during the reoperation.

was discharged seven days after the reoperation.

DISCUSSION

The thoracic duct begins at the cisterna chyli, which drains the lymphatic glands of the intestinal canal and lower extremity and ascends along the aorta [1]. Thoracic duct cysts can occur in the upper and/or the lower portions of the diaphragm [2,3]. Thoracic duct cysts in the upper portion of the diaphragm are mostly found in the neck and are rarely found in the mediastinum [4]. Typically, thoracic duct cysts are related to congenital or degenerative weaknesses in the wall of the thoracic duct [5]. These cysts are usually asymptomatic,

but sometimes result in clinical symptoms such as chest pain, dyspnea, dysphagia, cough, or backache due to pressure on the surrounding structures [5]. Using computed tomography, thoracic duct cysts cannot be differentiated from other mediastinal tumors or cysts [4,5]. In magnetic resonance imaging, signals indicating a high concentration of lipids in the cyst can aid in the diagnosis. Fine-needle aspiration is another option; however, the diagnosis should then be pathologically confirmed after surgical resection [6].

Typically, thoracic duct cysts are treated using surgical resection [6]. Although some reports have argued that surgical resection is unnecessary, surgical resection of thoracic duct cysts should be performed to avoid chylothorax if the cyst ruptures into the pleural cavity [6]. Chylothorax is the most common postoperative complication, making ligation of all branches of the thoracic duct mandatory [6].

Our patient was incidentally diagnosed with a mediastinal tumor during a regular follow-up examination. Based on radiological findings, a neurogenic tumor or bronchial cyst was suspected. Initially, the presence of a thoracic duct cyst was not considered because the lesion was located at the level of the left diaphragm, which is not the usual anatomical location of the thoracic duct. Since there was no clinical suspicion of a thoracic duct cyst, resection of the mediastinal mass was performed without ligating the thoracic duct; consequently, chylothorax developed postoperatively. This rare case, in which a thoracic duct cyst was located at the level of the left diaphragm, is of clinical significance because such cysts can easily be mistaken for neurogenic tumors or bronchial cysts.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

REFERENCES

1. Neas JF. *The lymphatic system*. In: Martini FH, Timmons MJ, Tallitsch B, editors. *Human anatomy*. 4th ed. Old Tappan (NJ): Pearson Education/Benjamin Cummings; 2003.
2. Cha EM, Sirijintakarn P. *Anatomic variation of the thoracic duct and visualization of mediastinal lymph nodes: a lymphographic study.* Radiology 1976;119:45-8.
3. Akcali O, Kiray A, Ergur I, Tetik S, Alici E. *Thoracic duct variations may complicate the anterior spine procedures.* Eur Spine J 2006;15:1347-51.
4. Pramesh CS, Deshpande MS, Pantvaidya GH, Sharma S, Deshpande RK. *Thoracic duct cyst of the mediastinum.* Ann Thorac Cardiovasc Surg 2003;9:264-5.
5. Mori M, Kidogawa H, Isoshima K. *Thoracic duct cyst in the mediastinum.* Thorax 1992;47:325-6.
6. Kwak MY, Bae CH. *Thoracic duct cyst in mediastinum: a case report.* Korean J Thorac Cardiovasc Surg 2011;44:83-5.