CASE REPORT

Postoperative chylothorax following lung cancer surgery with an aberrant course of thoracic duct: a case report

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Abstract

Postoperative chylothorax occurs relatively rarely after pulmonary resections, often caused intraoperatively by injury to the thoracic duct. We describe a case of postoperative chylothorax after lung cancer surgery with an aberrant thoracic duct course. A 66-year-old man showed abnormal findings on chest computed tomography (CT) during health screening and was suspected with primary lung cancer. Then, he underwent a right upper lobectomy with mediastinal lymph-node dissection. The histopathological findings confirmed lung adenocarcinoma. However, the patient developed a postoperative chylothorax and underwent revision surgery. An abnormally running thoracic duct, which was expected to flow into the right venous angle, was found at the cranial side of the right superior mediastinal dissection area and was clipped. Considering the many variations in the route of the thoracic duct, thoracic surgeons should remain alert for postoperative chylothorax when performing lung cancer surgery with mediastinal lymph-node dissection and prepare treatment strategies accordingly.

INTRODUCTION

Postoperative chylothorax is a relatively rare complication following pulmonary resection with an incidence rate from 1.4 to 2.3%. It occurs after pulmonary resection with lymph-node dissection [1, 2] and is primarily caused intraoperatively by injury to the thoracic duct; however, the thoracic duct has many anatomical variations [3, 4]. Herein, we report a case of postoperative chylothorax with an aberrant course of the thoracic duct after right upper lobectomy with mediastinal lymph-node dissection.

CASE

A 66-year-old man with a history of diabetes mellitus and atrial fibrillation visited our hospital after a routine health screening when an abnormality was detected on chest computed tomography (CT). His physical examination was unremarkable. A tumor biomarker test revealed elevated carcinoembryonic antigen (7.3 ng/ml) levels; all other biochemical markers were within normal limits. The chest CT revealed an irregular emphysematous cyst and an infiltrative shadow, 60 mm in diameter, along the...
Cyst wall in the right upper lobe (Fig. 1a and b). The hilar or mediastinal lymph nodes were not swollen. We made a preoperative diagnosis of suspected primary lung cancer (cT3N0M0, stage IIB) and performed right upper lobectomy with hilar and mediastinal lymph-node dissection by video-assisted thoracic surgery. Intraoperatively, the mediastinal pleura was incised in the right superior mediastinal dissection area using an energy device, and the anterior surface of the trachea was dissected with clipping, as appropriate. Retrospectively, a tortuous duct was detected near the cranial side in the superior mediastinal dissection area, which was dissected using the energy device (Fig. 2). From the histological findings, lung adenocarcinoma (pT1cN0M0, stage IA3) was diagnosed. On postoperative day (POD) 1, milky fluid was drained after the patient resumed eating. The triglyceride level in the pleural fluid was elevated to 457 mg/dl, and the patient was diagnosed with chylothorax. A low-fat diet (fat intake 35 g/day) was administered to the patient, but oral intake cessation with total parenteral nutrition, somatostatin, thoracic duct embolization and thoracic duct ligation [1, 2, 8]. Lymphangiography is performed to determine the exact location of the thoracic duct and has a therapeutic effect on postoperative chylothorax as well [8–10]. However, since reoperation was required immediately after the first surgery, we did not perform lymphangiography in our patient. Nevertheless, performing lymphangiography is important to detect the exact course of the thoracic duct and identify the point of chyle leakage. Therefore, as early reoperation was conducted on POD 2 in our case, the intrathoracic adhesions were mild, and dissection and intraoperative manipulation were relatively easily performed.

CONCLUSION
We report a case of postoperative chylothorax after lung cancer surgery with an aberrant thoracic duct course. Our case report demonstrates the importance of being aware of the variations in the route of the thoracic duct that thoracic surgeons should be cognizant of while performing lung cancer surgeries with mediastinal lymph-node dissection. Further, appropriate treatment strategies for postoperative chylothorax should be determined.

SUPPLEMENTARY MATERIAL
Supplementary material is available at JSCREP Journal online.

CONFLICT OF INTEREST STATEMENT
The authors declare no conflicts of interest.

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