Case Report

THORACIC DUCT INJURY DURING CORRECTION OF SCOLIOSIS

Binnaz Ay, M.D. / Varlık Doğan, M.D.
Murat Bezer, M.D. / Arzu Gerçek, M.D.

* *Department of Anesthesiology and Reanimation, School of Medicine, Marmara University, Istanbul, Turkey.*

** *Department of Orthopaedics and Traumatology, School of Medicine, Marmara University, Istanbul, Turkey.*

ABSTRACT

Lymphatic complications are uncommon after spinal surgery. Thoracic duct injury is a rare complication of scoliosis surgery. Intensive care staff must be alert about complications, because early diagnosis is essential for treatment. To increase awareness of the surgeon and the intensive care staff about such a rare postoperative complication, we report a 5-year-old girl patient who developed a thoracic duct injury after correction of scoliosis.

Key Words: Scoliosis, Complication; Lymphatic, Chylothorax.

INTRODUCTION

Lymphatic complications are uncommon after spinal surgery. The cisterna chlyi is normally hidden in prevertebral tissue and rarely encountered by the orthopaedic surgeons. However, hyperextension injury and anterior surgical approach to the spine can result in injury and the complication of chylothorax (1). To increase the vigilance of the intensive care staff about such a rare postoperative complication, we report a patient who developed a thoracic duct injury after correction of scoliosis.

CASE REPORT

A 5-year-old girl was scheduled for anterior release and posterior fusion for correction of scoliosis. Her past medical history revealed an anterior fusion surgery one year ago. With a posterolateral thoracotomy, incision was made for the resection of the seventh rib. After resection of the seventh rib the posterior periosteal layer of the rib bed was incised and the chest was exposed. The mediastinal pleura over the anterolateral spine was incised with electrocautery in vertical direction. The segmental vessels were dissected free, double occluded with ligaclips and peeled medially and laterally. After exposure the discs of T-7 to 10 were excised with a sharp knife and rongers. Anterior longitudinal ligament was remodeled at T7-10 levels also. After an uneventful surgery, the patient transferred to the intensive care unit (ICU). At postoperative day 3, the chest radiograph showed total atelectasis and fluid collection over the left lung. Fiberoptic

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Correspondence to: Varlık Doğan, M.D. - Department of Anesthesiology and Reanimation, School of Medicine, Marmara University Hospital, Altunizade 81190 Istanbul, Turkey.
e.mail address: doganiv@marmara.edu.tr

bronchoscopy performed to rule out any endobronchial lesion proved negative. After thoracenthesis, chylous fluid was obtained and thoracostomy was performed with a 24 F tube. The patient was diagnosed as having chylothorax when the triglyceride level of the drained fluid was 212 mg dl^{-1}. The chylothorax was managed conservatively. Oral intake was stopped and the patient received total parenteral nutrition (TPN) (protein-rich nutrition supplemented with medium-chain triglycerides). As the chylous fluid drainage from the pleura continued for 14 days, the patient was scheduled for thoracotomy for thoracic duct repair. After an uneventful surgery the patient transferred to the ICU. The patient received TPN for the first three days. When drainage from the chest tube ceased, the chest tube was removed and she was put on an oral diet supplemented with medium-chain triglycerides. Results of the blood tests were as follows: glucose, 120 mg dl^{-1}; BUN, 12 mg dl^{-1}; creatine, 0.2 mg dl^{-1}; Na, 133 mmol L^{-1}; K, 3.5 mmol L^{-1}; Magnesium, 2.38 mg dl^{-1}; cholesterol, 198 mg dl^{-1} (normal range: 140-250); HDL, 17 mg dl^{-1} (30-70); LDL, 122 mg dl^{-1} (60-160); VLDL, 59 mg dl^{-1} (20-30); triglyceride, 293 mg dl^{-1} (10-160). She was transferred from the ICU on postoperative day 7. Her stay in the ward was uneventful, and she was discharged home one month after the first operation.

DISCUSSION

Surgical trauma accounts for about 25 % of the cases of chylothorax, a rate second only to that of lymphoma. Multiple number of cases of chylothorax due to blunt trauma with fracture of the spine and as a rare complication of massive osteolysis are reported in literature (2-4). Lymphatic complications are uncommon after spinal surgery. The cisterna chyli is normally hidden in prevertebral tissue and rarely encountered by orthopaedic surgeons. However, hyperextension injury and anterior surgical approach to the spine can result in injury to the thoracic duct. To present knowledge, this complication is reported to occur in 0.2% of intrathoracic operations, and may give rise to 50% mortality unless recognized and properly managed (5). When the thoracic duct is torn by stretching during surgery, chyli leaks into the mediastinum and subsequently invades the pleural space. Postsurgical collections of lymph may result in chyloma, chylothorax or chylous ascites, or chyloretroperitoneum. Recommended treatment of chylothorax or chylous ascites includes drainage, and a low-fat diet using medium-chain triglycerides or TPN.

In our case, chylothorax was recognized on the 3rd postoperative day when the chest radiograph revealed atelectasis and a large unilateral effusion. At first, chylothorax was managed nonoperatively with tube drainage. The patient received protein-rich nutrition parenterally. As drainage continued, a decision was made for operative obliteration of the chylous leak. After the operation she had an uneventful recovery.

Prevention of postoperative chylothorax is mainly through awareness of normal anatomic distribution. When using the anterior approach in both trauma and deformity, one must be aware of the structure and the potential complication of injury. The morbidity of chyli leakage is minimized by its early recognition, a thorough understanding of lymphatic system anatomy, and aggressive management of the thoracic duct injury (5).

Although thoracic duct injury is a rare complication of scoliosis surgery, the intensive care staff must be alert about complications, because early diagnosis is essential for treatment.

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