

Isolated thoracic duct injury in penetrating neck trauma: a case report

Penetran boyun travmasında izole torasik duktus yaralanması: Olgu sunumu

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A 39-year-old man was admitted with a stab wound to left lower neck. Chest X-ray revealed a left hydropneumothorax. Thoracentesis was performed and analysis of the fluid revealed chyle. Patient was treated conservatively by closed chest drainage and total parenteral nutrition. On the basis of this clinical report and review of the literature, it is concluded that thoracic duct injury should be kept in mind in penetrating neck trauma and conservative treatment should be the first line therapy.

Key Words: Chylothorax; conservative treatment; neck injury; thoracic duct.

Otuz dokuz yaşındaki erkek hasta, sol alt boyun tarafındaki bıçak yaralanması ile başvurdu. Göğüs grafisinde sol hidropnömotoraks mevcuttu. Torasentez yapıldı ve analiz şilöz sıvıyı gösterdi. Hasta kapalı göğüs drenajı ve total parenteral beslenme ile konservatif olarak tedavi edildi. Bu klinik olgunun ve literatür taramasının temelinde, torasik duktus yaralanması penetran boyun travmalarında akılda tutulmalı ve öncelikli olarak konservatif tedaviye başvurulmalıdır.

Anahtar Sözcükler: Şilotoraks; konservatif tedavi; boyun yaralanması; torasik duktus.

Thoracic duct injuries without any major vascular or tracheoesophageal injury in penetrating cervical trauma are rare. Studies have reported the incidence of thoracic duct injury in penetrating neck trauma as 0.9% to 1.3%.^[1,2] In 1995, seven isolated thoracic duct injury secondary to penetrating neck injury have been published.^[3] Since then, no further such cases have been reported in the English literature, to our knowledge. A case of chylothorax due to an isolated thoracic duct injury following a penetrating neck trauma and which was treated conservatively is herein reported. The type of injury and management strategies were discussed along with a new case.

CASE REPORT

A 39-year-old male patient admitted to Dicle University Hospital Emergency Department one hour after being assaulted. The patient was stabbed just above the sternoclavicular junction in the left

lower neck. He had a 2 cm sutured wound. On primary survey the patient was hemodynamically stable but there was a slight difficulty in breathing. There was no edema or hematoma on the left side of the neck and no apparent drainage from the wound. Heart rate and blood pressure were 98/minute and 120/80 mmHg, respectively. Breathing sounds was diminished at the left hemithorax and chest X-ray revealed a hydropneumothorax with no evidence of mediastinal or cervical subcutaneous emphysema (Fig. 1).

Thoracentesis revealed a milky fluid which was presumed to be chyle, indicating an injury of the thoracic duct. A thoracostomy tube was inserted by the left fifth intercostal space and 1100 ml chylous drainage were evacuated initially, resulting in reexpansion of the lung. Physico-chemical analysis of sample demonstrated that the fluid was chyle. A

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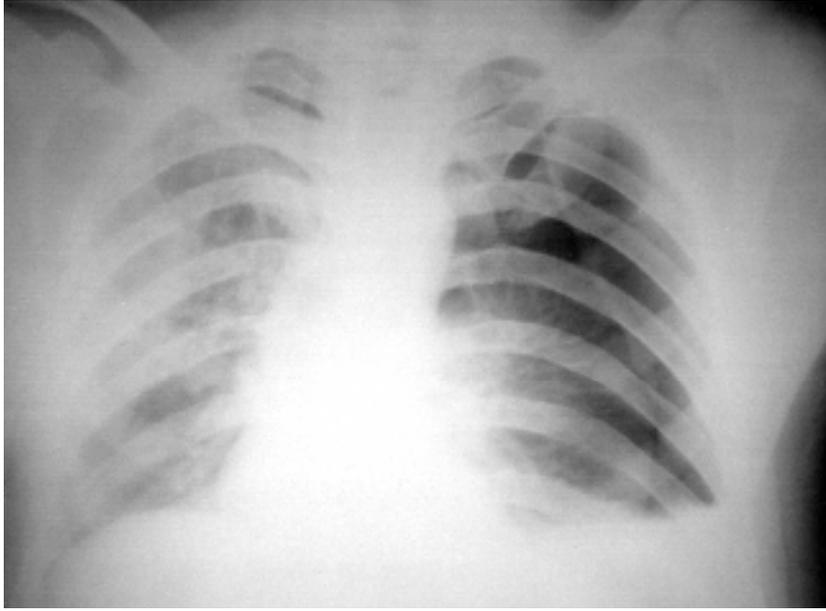


Fig. 1. Chest X-ray showing left-sided hydropneumothorax.

central venous catheter was inserted in the right subclavian vein and total parenteral nutrition (TPN) was started with restriction of oral intake. Additionally, ceftriaxone as antibiotic, gastric anti-secretory agent, albumin according to the blood albumin level, vitamins and trace elements were administered. On the first day chylous drainage was 700 ml, then dropped to 500 ml on the second day and 300 ml on the third day. Chylous drainage remained constant around this latter value on the following 4 days, decreased to 150 ml on the 7th day, and stopped completely 10 days after the thoracic drainage. The thoracic drainage was clamped on the 11th day, allowing resumption of oral intake, with a free diet. There was no evidence of chylous drainage during next two days. The chest tube was removed on the 13th day after a control chest X-ray. The patient was discharged on 16th day in good status (Fig. 2). He had no problem and well at follow-up one year later.

DISCUSSION

Thoracic duct injury from penetrating neck trauma is rare. Furthermore, it is extremely rare for the thoracic duct to be injured in isolation as this injury is usually masked by associated major vascular or visceral injuries.^[3] Diagnosis of thoracic duct injury is mostly made during neck exploration when chyle emanates from the wound. Less frequently, thoracic

duct injury is diagnosed based on the presence of chylothorax, but it usually follows intrathoracic trauma to the duct,^[2] or chyle fistula in the neck.^[1] In our patient, wound have been sutured before admission to the hospital. There was no bloody or milky drainage and edema or hematoma, so we did not explore the wound. Diagnosis of thoracic duct injury was determined with presence of chylothorax in our case. Worthington et al.,^[3] described seven isolated thoracic duct injury after penetrating supraclavicular injury. They stated that all thoracic duct injuries occurred in Poirier's triangle, which is bounded by the arch of aorta, left subclavian artery, and the vertebral column. The esophagus lies in the base of this triangle with the thoracic duct lateral to the esophagus.^[3]

We decided that thoracic duct injury occurred in Poirier's triangle although we did not perform thoracotomy. However, diagnosis of thoracic duct injury is most commonly established when chyle emanates from the wound.^[1,2] In these cases, cervical portion of the thoracic duct is generally injured at its point of entry into the venous system and most of them are concomitant with venous vascular injuries.^[2] Isolated cervical ductal injuries have been reported being related to iatrogenic causes, most often due to radical neck dissections.^[2,4] In cervical chyloma or cervical chylous drainage, ligation



Fig. 2. Chest X-ray of the patient after removing the chest tube.

of the thoracic duct is indicated to avoid potential complications. In these cases ligation of thoracic duct injury is the procedure of choice advocated by all reports.^[1,5,6]

Numerous surgical options have been advocated for the closure of the duct: Identification of the tear in the thoracic duct and repair, ligation or patch closure with pleura, instillation of fibrin glue into the pleural space, pleuroperitoneal shunts, pleurodesis by pleurectomy, pleural abrasion, pleural tetracycline or talc instillation and video-assisted thoracoscopic techniques: clipping with or without talc insufflation.^[3]

Ligation or clipping of the duct was advocated in thoracoscopic approaches, rather than talc insufflation or fibrin glue instillation in group of young, otherwise fit people. Microscopic repair of the duct may be attempted after iatrogenic injury, but it is not advisable in the multi-trauma victims.^[2] In penetrating isolated right-sided traumatic chylothoraces, the duct should be ligated at the level of the diaphragm through the right thoracotomy.^[3]

The optimal management of traumatic chylothorax has not been clearly defined. Worthington et al., performed medical treatment initially in 5 of 8 patients who had chylothorax. But, thoracic duct injury did not close spontaneously in any of these medically treated patients. All of the eight patients

were eventually surgically. Moreover, no chylothoraces from stab wounds injured thoracic ducts were treated successfully by conservative management in the series by Goorwich.^[3] However, as in our patient conservative management should be initially performed as alternative to surgical approach. With isolated penetrating thoracic duct injuries, the rate of spontaneous closure of iatrogenic or traumatic thoracic duct injuries by conservative management has been shown to be high.^[1,7] Closed chest drainage prevents the accumulation of chyle in the pleural cavity and facilitates the monitoring of chyle output, whereas hyperalimentation and bowel rest significantly reduce chyle production.^[1,5] Chyle formation is closely correlated with enteral fat. Most conservative regimens involve a low fat diet supplemented with medium chain triglycerides to reduce chyle production. But it must be remembered that any oral feeding will increase the output of the chyle fistula. Therefore, complete gut rest and TPN appear to provide the best conditions for fistula closure and nutritional support when available.^[8] We immediately started TPN, and this allowed us maintain a rather stable and metabolically balanced condition. The duration of the trial of conservative management has not been so far uniformly stated. Empirically, it is generally agreed that surgical correction of the fistula should be considered before the patient becomes severely mal-

nourished. Generally, acceptable period for conservative management should not exceed 14 days, unless obvious clinical improvement has occurred. There is evidence of immunological depression and risk of sepsis when this period exceeds.^[9,10]

In conclusion, a thoracic duct injury should be kept in mind, despite thoracic duct injuries secondary to penetrating neck trauma are rare. If there is an active chylous drainage from the wound, exploration and ligation of ductus is appropriate treatment. But, if the diagnosis is made only with a chylothorax, treatment should be attempted conservatively by drainage and early total parenteral nutrition initially. If spontaneous closure of the duct does not occur within 14 days, the decision of definitive surgery should be taken.

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