DOI: 10.4149/BLL_2015_131

Bratisl Med J 2015; 116 (11)

674 – 675

CLINICAL STUDY

Chylothorax – multidisciplinary solution

Kovacicova K[1], Omran N[1], Habalova K[2], Kaltofen K[3]

Charles University in Prague, Faculty of Medicine in Hradec Kralove and University Hospital in Hradec Kralove, Czech Republic. **k.kovacicova@email.cz**

ABSTRACT

Surgical treatment is not commonly used in the management of chylothorax. We describe a complicated algorithm that we used in treating a 70-year-old lady with Bechterev disease, who suffered from a blunt chest injury with subsequent right-sided serial ribs fracture with hemothorax and thoracic vertebral body fracture. Because of Bechterev disease, hyperextension of the ossified thoracic spine caused an injury of the thoracic lymphatic duct. Simultaneous thoracic spine stabilisation with surgical revision of the thoracic lymphatic duct from an anterior approach was indicated. Despite the urgency of thoracic spine stabilisation, the procedure was postponed due to an acute coronary syndrome, which implied drug eluting stent insertion with a subsequent need of dual anti platelet therapy. Thus, the procedure was done 16 days after stent insertion.

The diagnosis of chylotorax must be considered in case of thoracic injury with continuing waste to the chest tube and the finding of well expanded pulmonary parenchyma. Biochemical investigation of the effusion is the cornerstone in establishing the diagnosis of chylothorax *(Tab. 2, Fig. 1, Ref. 14)*. Text in PDF *www.elis.sk.*

KEY WORDS: chest trauma, chylothorax, thoracic vertebrae fracture, ductus thoracicus.

Patient

A 70-year-old female patient with Bechterev disease fell down on the stairs and suffered from a serial fracture of the 5th–8th rib on the right with hemithorax and fracture of the vertebral body of Th12 without neurological symptoms. 850 ml of blood was drained out at a single evacuation and blood losses did not continue. On the third day following the injury, chylous fluid appeared in the thoracic drain with a daily production of 1,500–1,800 ml (Fig. 1). The biochemical analysis confirmed chylothorax (Tab. 1). The post-injury status caused an acceleration of unstable angina pectoris with a reduction of blood pressure; a catecholamine support of cardiac activity was needed. An urgent coronarography found a critical stenosis of the dominant right coronary artery and angioplasty using a coated stent was performed. The surgical stabilization of the thoracic spine was complicated by the coronary event and it was necessary to administer 14-day dual anti-aggregation therapy. Following discontinuation of the dual anti-aggregation therapy on the 18th day after the surgery, she underwent a joint thoracic and neurosurgery operation with administration of low-molecular heparin. From the right lower posterolateral thoracotomy in the 7th intercostal space we performed a ligation of the thoracic lymphatic duct in the internal costophrenic angle above the diaphragm in the anterior surface of the thoracic vertebral body. Then we performed a partial corporectomy of the upper 1/3 of the vertebral body of Th12 and we inserted the X PAND implant into the created bed that was later overlaid with bone pulp. Fixation of the spine was performed from the lateral side from Th11 to L1 using the thoracolumbar spine looping plate (TSLP). The post-operative course was complicated with cardiac failure on the basis of a reduced cardiac ejection fraction to 45 % following non-transmural myocardial infarction. The thoracic drain was removed on the 6th post-operative day following a decrease of the output of serous-sanguinolent fluid below 200 ml in 24 hours. Based on the biochemical examination it was not chylous fluid (Tab. 2).

Tab. 1. The biochemical analysis.

	Serum	Pleural fluid
Total protein ($g.l^{-1}$)	54.6	29.7
Triacylglycerol ($mmol.l^{-1}$)	1.72	19.38
Cholesterol ($mmol.l^{-1}$)	3.54	2.13

Tab. 2. Lipid spectrum in the pleural fluid.

	Before surgery	After surgery
LD ($\mu kat.l^{-1}$)	8.79	1.27
Cholesterol ($mmol.l^{-1}$)	2.13	0.44
Triacylglycerol ($mmol.l^{-1}$)	19.38	0.16
Total protein ($g.l^{-1}$)	29.7	26.3

Discussion

Blunt thoracic injuries represent 90 % of thoracic injuries in our records. Only some patients (15–17 %) are indicated for surgical intervention mostly due to unstable chest wall with respiratory

Charles University in Prague, Faculty of Medicine in Hradec Kralove and University Hospital in Hradec Kralove, Czech Republic, [1]Department of Cardiac Surgery, [2]Department of Clinical Microbiology [3]Department of Neurosurgery

Address for correspondence: K. Kaltofen, Department of Neurosurgery, Charles University in Prague, Faculty of Medicine in Hradec Kralove and University Hospital in Hradec Kralove, Czech Republic.

Acknowledgement: Supported by the programme PRVOUK P37/4 and the MH CZ-DRO (UHHK, 00179906).

Fig. 1. MRI image comminutive fracture thoracic vertebra Th12.

insufficiency (1, 2). A lymphatic duct injury is not common even in blunt mediastinal injuries (3). Chylothorax is often present in fractures of the thoracic vertebrae in 20 % (4). During hyperextension of the thoracic spine, the lymphatic duct was stretched over the diaphragmatic tentacles to the vertebrae (5). In Bechterev disease with limited movement of the vertebral bodies even a small external force can cause its fracture with injury of the thoracic lymphatic duct.

Chylothorax of a non-injury aetiology occurs following pulmonary resections of the central pulmonary tumours in approximately 1 % of cases (6). The principal lymphatic duct is not affected but only some of its branches. Therefore, the lesion can be cured conservatively. Iatrogenic chylothorax following preparation of the mammary artery in aorto-coronary bypass is rare and occurs in less than 0.1 % of cases. Early parenteral therapy is curative (7). Iatrogenic chylothorax with a prolonged administration of the Vacuum Assisted Closure system (V.A.C) during sternal osteomyelitis following cardiac surgery resulted in broncho-cutaneous fistula with the need for pulmonary resection (8).

Conclusion

Conservative therapy of a non-injury chylothorax is often successful. It consists in total parenteral nutrition and thoracic drainage. Administration of somatostatin is recommended to decrease the production of chylous fluid in the gastrointestinal tract (9). There is no joint opinion regarding the duration of the conservative therapy. If more than 1,500 ml of chylous fluid is drained daily for more than 5 days, there is little chance of a conservative cure (10). The status results in malnutrition and an infection occurs in the pulmonary wing compressed by the exudate.

Infrequency of the traumatic chylothorax is documented only in the case reports. The rare case indicated the need for mutual collaboration of multi-surgical specialties. A good effect of therapy confirmed a long-term and effective co-operation between thoracic surgeons and neurosurgeons (11). Close co-operation of cardiosurgeons, thoracic surgeons and radiologists is needed (12, 13, 14).

References

1. Habal P, Šimek J, Štětina M. Časná chirurgická stabilizace hrudníku. Rozhl Chir 2002; (81): 167–169.

2. Habal P, Šimek J, Novotný J. Dvoudobá chirurgická stabilizace hrudní stěny – kasuistika. Acta Med HK Suppl 2003; 46 (1–2): 75–77.

3. Šmejkal K, Žvák I, Holeček T, Habal P, Lochman P. Ischemic Affection of Spinal Cord as a Result of the Blunt Thoracic Trauma – A Case Report. Rozhl Chir 2008; 87 (7): 344–346.

4. Ikonomidis JS, Baulanger BR, Brenneman FD. Chylothorax after blunt chest trauma: a report of 2 cases. Can J Surg 1997; 4: 135–138.

5. Birt AB, Connolly NK. Traumatic chylothorax: a report of a case and a surfy of the literature. Br J Surg 1952; 39: 564–568.

6. Le Pimpec-Barthes F, D´Attellis N, Dujon A. Chylothorax complicating pulmnonary resection. Ann Thorac Surg 2002; 73: 1714–1719.

7. Manďák J, Habal P, Štětina M, Harrer J. Chylothorax – a rare complication after cardiac surgery. Acta Med (Hradec Králové) 201; 54 (1): 37– 39.

8. Omran N, Habal P, Mandak J. Broncho-Pleural Fistula Folloving Vacuum-assisted Closure Therapy. J Cardiac Surg 2013; 28 (4): 397–398.

9. Gomez-Caro AA, Marron CF, Moradiollos Diez FJ. Octreotide for konservative management of postoperative chylothorax. Arch Bronchopneumol 2004; 40: 473–475.

10. Selle JG, Snyder WH, Schreiber JT. Chylothorax, indications for Surgery. Ann Surg 1973; 177: 245–249.

11. Habal P, Kaltofen K, Kostyšyn R, Štětina M, Málek. Fibrózní dysplazie žeber a páteře: multioborové řešení – kazuistika. Cesk Slov Neurol N 2010; 73/106 (6): 734–737.

12. Omran N, Habal P. Myxoma in the Left Atrium? Ann Thorac Surg 2012; 93: 73.

13. Omran N, Harrer J, Brtko M, Habal P, Turek Z, Brožik J. Recombinant Activated Factor VII Administration after Pulmonary Embolectomy: Case Report. Heart Surg Forum 2013; 1026 (4): 1–3.

14. Omran N, Habal P, Mandak J, Pojar M, Renc O, Harrer J. Penetrating Aortic Injury. Ann Thorac Surg 2014; 97: e119.doi.org/10.1016/2013.12.076.

Received August 25, 2014.
Accepted June 26, 2015.