Scholars Journal of Medical Case Reports
Sch J Med Case Rep 2014; 2(10):665-667
ISSN 2347-6559 (Online)
ISSN 2347-9507 (Print)

(An International Publisher for Academic and Scientific Resources)
www.saspublishers.com
DOI: 10.36347/sjmcr.2014.v02i10.007

A Rare Case of Chylothrax Following Surgery of Congenital Diaphragmatic Hernia

Shivaprasad B*, Lakshmi V, Shanmugasundaram R
Department of neonatology, Mehta children's hospital, Chennai-28, Tamilnadu, India

***Corresponding Author:**
Name: Dr. Shiva Prasad B
Email: neoprasad@gmail.com

Abstract: Chylothorax is a accumulation of lymphatic fluid in the pleural cavity and its occurrence as a post-operative complication following repair of congenital diaphragmatic hernia is rare. We report here a newborn with this condition which resolved with percutaneous chest drainage, parenteral hyperalimentation, enteral feeding of a formula high in medium-chain triglycerides and octreotide infusion.
Keywords: Chylothorax, congenital diaphragmatic hernia, medium-chain triglycerides , octreotide

INTRODUCTION

Chylous pleural effusions in the neonatal period, although rare represent the most common form of pleural fluid accumulation in early life following cardiothoracic surgeries. Chyle is characterised by its high triglycerides, low cholesterol and predominant lymphocyte contents. Treatment modalities available are administering enteral feeds with high MCT, mechanical drainage of chyle, octreotide – a somatostatin analogue infusion.

CASE REPORT

A full term male baby with a birth weight of 3.3 kg with antenatal scan suggestive of left diaphragmatic hernia. Clinical examination and chest radiograph confirmed the presence of a left congenital diaphragmatic hernia (fig 1).Baby was ventilated and stabilized in the NICU. ECHO cardiogram showed moderate PPHN. Oxygen saturation and arterial blood gas were satisfactory. He underwent surgical correction of the hernia on day 3 of life. Intra-operatively, a large posterolateral defect of the left hemidiaphragm without a hernial sac was found. Post-operatively ICD was kept in situ. He was extubated on the second post-operative day to oxyhood. In view of moderate pneumothorax in the chest x-ray, ICD was left in situ. Feeding was initiated on the 3rd postoperative day. On the 5th postoperative day there was 40 ml turbid fluid through ICD tube and biochemical analysis revealed very high triglyceride (600 mg/dL) but low cholesterol (65 mg/dL) ,predominant lymphocytes(85%)and sterile suggestive of chyle (fig 2). Sepsis screening was negative. As there was progressive increase in chyle loss of about 100-120 ml/day ,baby was given TPN for 2 days and enteral nutrition with high MCT composition (Alfacare, Nestle) was started and breastfeeding was stopped. Despite this there was significant leakage of chyle in the chest drainage, octreotide infusion was started at 3 mcg/kg/hr on the 19th postoperative day and increased to 7 mcg/kg/hr over 3days and given for 6 days. Subsequently, the chylous effusion gradually became less tham 5ml/day and the chest tube was removed on the 25th postoperative day. Feeding with Alfacare was continued. The patient was discharged on day 32 with satisfactory weight gain and there was no significant re-accummulation of chylous effusion in Chest x-ray. Breast feeding was restarted in the 6th week of life. At 2 months of age, he was completely symptom-free.

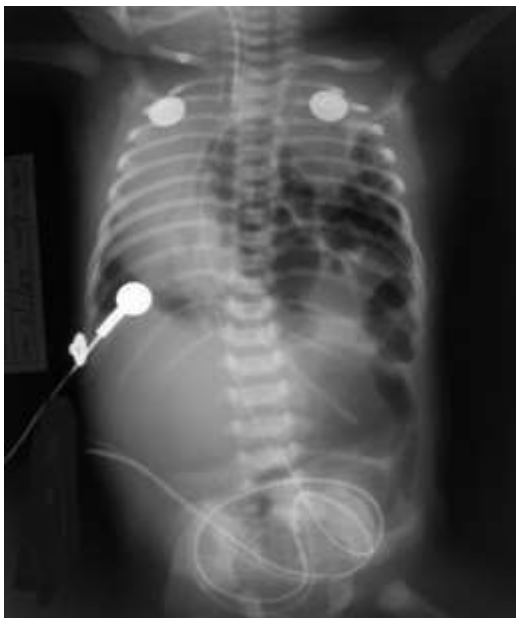

Fig 1 : Left congenital diaphragmatic hernia

Fig-2: Accumulation of Chyle in ICD Tube

DISCUSSION

Chylothorax following repair of congenital diaphragmatic hernia has rarely been recognised as a postoperative complication [2,3]. Chylothorax as a complication of congenital diaphragmatic hernia repair was first reported by Wiener et al in 1973 [1].

Chyle is lymphatic fluid enriched with fat secreted by intestinal cells. It is collected and transported via the thoracic duct into the circulation. Measuring fat content and demonstrating the predominance of lymphocytes in pleural effusion serves to prove chyle.

The pathogenesis of chylothorax formation following repair of diaphragmatic hernia is still unclear but operative injury to the thoracic duct and diaphragmatic lymphatics is implicated. The abnormal position of the thoracic duct and malformation of the abdominal lymphatics that may co-exist in this condition could predispose to injury even from minor trauma during surgical repair. In addition, the presence of a hernial sac which occurs in about 10% of cases of congenital diaphragmatic hernia [4], has been found to be a predisposing factor to chylothorax presumably secondary to division of the lymphatic vessels within the sac itself[5].

Chylous effusion is odourless and initially (prior to feeding), may not be milky in appearance. In addition, Staats et al reported that chylous effusions were milky in less than 50 percent of all cases [6]. Chyle has high triglyceride (greater than 110 mg/dL) but low cholesterol levels and contains predominantly Iymphocytes (400 - 6800/mm3), majority of which are the T-cells type[7].

The loss of chyle with high content of triglycerides and lymphocytes is associated with nutritional and possibly infectious complications. Loss of chyle affect the fluid balance and impairs the coagulation function due to loss of proteins.

Conservative management of chylous effusions is preferred to surgical intervention. Continuous chest drainage accelerates healing by enhancing the apposition of pleural surface to the fistula. Enteral feeds may need to be ceased initially to decrease lymphatic production and nutritional support in the form of total parenteral nutrition will need to be commenced, as in this patient. Subsequently, enteral feeds with a fat content comprising mainly medium-chain triglycerides should be offered for a period of time until recovery. Medium-chain triglycerides are absorbed directly into the portal system and, therefore, minimize thoracic duct flow and promote healing of any chyle leakage. In 2001, Cheung and colleagues published the first report of using octreotide for the treatment of postoperative chylothorax in infants. It is believed that the multiple effects of octreotide on the gastrointestinal tract and the reduction in splanchnic blood flow reduce thoracic duct flow and decrease the triglyceride content of chyle. Octreotide is administered as an IV infusion starting at a dose of 1 to 4 mcg/kg/hr and titrating as needed to 10 mcg/kg/hr. The duration of therapy is typically determined by the reduction in the volume of pleural drainage and usually 3 to 10 days [9]. Surgical intervention by ligation of the thoracic duct is considered only when there is profuse chyle loss (100 ml/kg/day)[8], failure of an adequate trial of conservative management and presence of nutritional compromise despite optimal therapy.

CONCLUSION

Though chylothorax in newborns is rare following congenital diaphragmatic hernia repair, high index of suspicion helps in case of increased intercostal drainage fluid for the appropriate diagnosis and management.

REFERENCES

1. Wiener E, Owens L, Salzberg A; Chylothorax following a Bochdalek herniorrhaphy in a neonate. J Thorac Cardiovasc Surg, 1973; 65(2):200-5.
2. Czerniak A, Dreznik Z, Neuman Y, Wolfstein I; Chylothorax complicating repair of a left diaphragmatic hernia in a neonate. Thorax, 1981; 36:701-2.
3. Kavvadia V, Greenough A, Davenport M, Karani J, Nicolaides KH; Chylothorax after repair of congenital diaphragmatic hernia - risk factors and morbidity. J Pediatr Surg 1998; 33(3):500-502.
4. Vanamo K, Peltonen J, Rintala R, Lindahl H, Jääskeläinen J, Louhimo I; Chest wall and spinal deformities in adults with congenital diaphragmatic defects. J Pediatr Surg 1996; 31(6):851-854.
5. Mercer S; Factors involved in chylothorax following repair of congenital posterolateral diaphragmatic hernia. J Pediatr Surg 1986; 21(9):809-811.

6. Staats BA, Ellefson RD, Budhan LL, Dines DE, Prakash UB, Offord K; The lipoprotein profile of chylous and non-chylous pleural effusions. Mayo Clin Proc 1980; 55:700-704.
7. McWilliams BC, Fair LL, Murphy SA; Transient T-cell depression in postoperative chylothorax. J Pediatr 1981; 99:595-597.
8. Paes ML, Powell H; Chylothorax: An update. Br J Hosp Med 1994;151:482-490.
9. Au M, Weber TR, Fleming RE; Successful use of somatostatin in a case of neonatal chylothorax. J Pediatr Surg 2003;38:1106-1107.