CATHETER INDUCED CHYLOTHORAX AFTER ORTHOTOPIC HEART TRANSPLANTATION

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Chylothorax occurred after orthotopic heart transplantation in a 25-year-old patient, suffering from idiopathic cardiomyopathy, in early postoperative period. Chylothorax occurred because of left jugular catheter insertion. He was cured with tube drainage and diet regimen without the need for surgical therapy. The patient was lost on 32nd postoperative day because of right heart and renal failure not related to chylothorax.

Keywords: Orthotopic heart transplantation, chylothorax, jugular catheter

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Chylothorax is a rare complication seen after open heart surgery and median sternotomy, which occurs in the early postoperative period. Reported chylothorax cases following both adult and pediatric heart transplantation are extremely rare.

CASE

Suffering from dyspnea for one and a half year, a 25-year-old male patient was hospitalized for three times in the last six months with findings of right heart failure. On physical examination he was found to be orthopneic, S3 and S4 were heard on cardiac auscultation. Hepatomegaly and (++) pretibial edema existed. His electrocardiogram showed sinus rhythm. Laboratory findings including hemogram, biochemical and serological results were all normal. Cardio thoracic index was increased on telecardiogram, right and left cardiac siluets were enlarged. Echocardiography showed that all segments were hypokynetic; cardiac chambers were severely enlarged (EDD: 7.4 cm, ESD: 5.6 cm). Ejection fraction was 24%; systolic pulmonary artery pressure was 50 mmHg. Or-

tothopic heart transplantation was performed by biatrial cuff technique. Total ischemic period was 4 hours and 38 minutes (donor heart was accepted from another city). The heart started to beat with a third degree heart block. Epicardial pace wires were placed on right atrium and right ventricle. Low dose adrenaline, dopamine and Prostaglandin I2, nitroglycerin and pacemaker support were started while weaning from cardiopulmonary bypass. 800 cc serous fluid secondary to cardiac failure was aspirated from left thoracic cavity and chest tubes were placed into both thorax cavities and the mediastium. Systolic pulmonary artery pressure was 60 mmHg. He was extubated on the postoperative 36th hour. Classical triple (prednisolone 1 mg/kg, azathioprine 2 mg/kg and cyclosporin 5 mg/kg) immunosuppressive therapy was initiated. Inotropic support was totally stopped on the postoperative 4th day.

Mediastinal drainage tube was pulled out on the postoperative day 2, but serous drainage continued from thoracic drainage tube. On postoperative day 6 the characteristics of serous drainage turned to chyle. Laboratory analysis of this fluid was as follows: pH: 7.42, LDH: 300 U / L, Protein 1.9 gr / dl, triglycerides: 728 mg / dl, cholesterol: 50 mg / dl, glucose: 105 mg / dl. Lymphocyte majority was detected on microscopic analysis. No microorganism was determined and no culture specimen was positive. Total parenteral nutrition support and a diet rich of medium-chain fatty acids was started. Heavy-chain fatty acids were restricted. The average drainage amount per day was 150 ml and lasted for 2 weeks. In our patient chylothorax most probably occurred because of left jugular catheter intervention because it significantly decreased after the catheter was taken off. Cyclosporin level was between 250 and 300 ng / ml. As soon as drainage ceased, chest tube was taken off on postoperative day 21. Supporting therapy was ceased. After one week of uneventful follow up, pancytopenia occurred (wbc: 1500 / mm3). That was why cyclosporin and azathioprine doses were decreased. Mild rejection was diagnosed and suitable therapy was started. But patient was lost because of renal insufficiency and right heart failure on postoperative day 32.

DISCUSSION

Chylothorax can be seen not only following pulmonary interventions, esophageal resection, correction of congenital heart diseases and subclavian punctions, but also after coronary artery bypass surgery because of neighborhood of thoracic duct with the left internal mamarian artery [1]. Chylothorax incidence following intrathoracic surgery is between 0.2 and 0.5%. Chylothorax following transplantation has been reported only in two adult and two congenital cases [2-6]. The reason is related to either direct thoracic duct or anterior mediastinal and parasternal lymphatic collateral injury. Usually it occurs two days to four weeks following the procedure. The relationship to indwelling central lines - primary related to venous clots is also a recognized clinical phenomenon. Cream colored aspiration material and three times increased levels of triglyceride concentration is diagnostic. It includes highly concentrated lipid, protein, electrolyte, lipid soluble vitamins and T lymphocytes. There could be 1.5-2 lt chyle transport daily. Metabolic acidosis, malnutrition and electrolyte imbalance could result because of excessive loss [1,3]. Chylothorax is much more important in transplantation patients because of both T lymphocyte and cyclosporin loss. Because of cyclosporin loss, its blood level can decrease. To maintain its blood level within desired values IV administration should be started [2]. Rejection attacks can accompany this situation [4]. Due to the excessi-

ve loss of T lymphocytes, the possibility of infection could increase. White blood cell, lymphocyte count and cyclosporin level must be carefully observed. Excessive decrease of lymphocyte count is an indication for surgery [1,3]. The classic therapy is tube drainage and restriction of heavy-chain fatty acids while using medium-chain fatty acids enriched diet. In case that the drainage exceeds 200 ml per day and the drainage period exceeds 2 weeks, early surgical intervention can be performed. This can be accomplished by ligation, pleurodesis or videothoracoscopy assisted correction [1]. In our patient chylothorax most probably occurred because of left jugular catheter insertion because it significantly decreased after the catheter was taken off. In our patient diet therapy was curative and at the end of the second week the drainage totally stopped. In spite of the fact that the daily mean chyle loss was 150 ml, cyclosporin blood levels remain within desired limits with oral intake and IV administration was not needed. The white blood cell count of the patient did not decrease significantly during chyle loss. Pancytopenia was related to azathioprine overdose and it returned to normal after stopping the drug. In our patient rejection was not detected while the chyle loss occurred. One week after chyle loss ended, mild rejection attack was detected and steroid therapy was initiated. Unfortunately free of all these events the patient was lost because of renal and right heart failure. Although chylothorax following transplantation is a rare complication, early diagnosis and treatment is important. Chylothorax can add difficulties to transplant patient's management and follow up. In these patients, careful watch up for T lymphocyte and cyclosporin blood levels should be done.

REFERENCES

1. Fahimi H, Casselman FP, Mariania MA, van Boven WJ, Knaepen PJ, van Swieten HA. Current management of postoperative chylothorax. Ann Thorac Surg 2001;71:448-50.
2. Repp R, Scheld H H, Bauer J, Becker H, Kreuder J, Netz H. Cyclosporine losses by chylothorax. J Heart and Lung Transplant 1992;11:397-98.
3. Bowerman RE, Solomon DA, Bognolo D, Brauner LR. Chylothorax: Report of a case complicating orthotopic heart transplantation. J Heart and Lung Transplant 1993;12:665-68.
4. Conroy JT, Twomey C, Alpern JB. Chylothorax after orthotopic heart transplantation in an adult patient: A case complicated by an episode of rejection. J Heart and Lung Transplant 1993;12:1071.
5. Twomey CR. Chylothorax in the adult heart tansplant patient: a case report. Am J Crit Care 1994;3:316-9.
6. Mignosa C, Duca V, Ferlazzo G, Bianca I, Salvo D. Chylothorax: An unusual manifestation of a large atrial septal defect. J Thorac Cardivasc Surg 2001;122:1252-53.