

Case report

Chylothorax after coronary artery bypass and internal mammary artery harvesting: a case report

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Introduction

As previous studies have revealed, postoperative chylothorax is a rare complication of cardiothoracic surgery procedures, especially myocardial revascularization [1–4]. It occurs in less than 1% of thoracic procedures [5] and 0.6%–0.8% of cases of cardiovascular surgery [6].

We describe a case of chylothorax that occurred a few days after coronary artery bypass grafting and which was treated only with low-fat diet.

Case presentation

A 54-year-old diabetic man underwent triple coronary artery bypass grafting using the left internal mammary artery (LIMA) and saphenous vein. The LIMA was harvested with electrocautery and grafted onto the left anterior descending artery. The first postoperative day was uneventful, but the second was complicated by severe left-sided chylothorax. The chest tube drainage contained about 400 mL of a milky fluid with a biological analysis of 88 mg/dL cholesterol and 250 mg/dL triglycerides. All the pleural effusion cultures and smears for *Mycobacterium* spp. were negative.

A diagnosis of chylothorax was made due to lymphatic injury during LIMA harvesting, and the patient was placed on a low-fat diet. The chylous effusion gradually reduced over the

following 21 days (total 3480 mL) using this conservative management. The amount of discharge on each day is shown in Table 1.

The chest X-ray was normal with no localized plural effusion or opacification. The patient was discharged on postoperative day 27, and remained well at 60 days' follow-up.

Discussion

Postoperative chylothorax, albeit rare, is a serious complication with a high mortality rate, which can approach 50% in untreated patients [4]. Furthermore, it can lead to fluid and electrolyte disturbances, protein–calorie malnutrition, coagulopathy and increased susceptibility to infection [7].

The lymphatics of the internal thoracic chain and left anterior mediastinal lymph node chain (LAMLNC) are divided during internal thoracic artery dissection in coronary artery bypass grafting. The LAMLNC is an important pathway for left lung lymph drainage [2]. It normally connects with the left jugulo-subclavian venous confluence after having crossed the LIMA near its origin at the apex of the thorax and sometimes with the arch of the thoracic duct near its termination [8]. Lymph vessels have valves and normally back-flow is impossible. Chyle valve insufficiency may allow backflow from the thoracic duct within the LAMLNC. Injury of such a backflowing LAMLNC is more likely

Table 1 Amount of discharge in a patient with chylothorax after coronary artery bypass and internal mammary artery harvesting

| Days post-operation | Amount of discharge (mL) |
|---------------------|--------------------------|
| 2 | 400 |
| 3 | 300 |
| 4 | 350 |
| 5 | 250 |
| 6 | 210 |
| 7 | 200 |
| 8 | 300 |
| 9 | 150 |
| 10 | 50 |
| 11 | 230 |
| 12 | 250 |
| 13 | 300 |
| 14 | 210 |
| 15 | 0 |
| 16 | 100 |
| 17 | 50 |
| 18 | 70 |
| 19 | 150 |
| 20 | 10 |
| 21 | 50 |
| 22 | 0 |
| 23 | 0 |
| Total | 3480 |

to explain chylothorax as a complication of LIMA harvesting than the injury of the thoracic duct itself since this is more deeply located in this region. The rarity of chylothorax following LIMA harvest is explained by the usual lymph vessel valve competency of the LAMLNC,

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which is not always connected with the thoracic duct itself [2].

Chylothorax is mainly treated by diet modification, including a low-fat diet or a diet with medium-chain triglycerides. In some cases, chylothorax is treated by somatostatin, and operative treatment remains an option for resistant chylothorax with no response to conservative medical treatment [1]. Late presenting

chylothorax responds more readily to conservative treatment as the leak volume is smaller and healing is more likely [3]. As Choong et al. showed in their literature review, most cases with early presenting chylothorax respond only to surgical procedures [1]. Our case and that reported by Weber et al. in 1981 [9] do not agree with the above findings. On the second postoperative day, our

patient developed severe chylothorax, which lasted for 21 days. However, he had no further complications related to chylothorax and responded well to dietary modification.

In conclusion, conservative therapy in uncomplicated cases of chylothorax seems to be a favourable option, and surgical intervention should remain as a final choice if conservative therapy fails.

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