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CLINICAL RECORD

Left-sided neck dissection and chylothorax: a rare complication and its management

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Abstract

Objective: We present a case of bilateral chylothorax, a rare but life-threatening complication, which developed following a left-sided neck dissection.

Method: Case report and literature review.

Results: Chylous leakage fistula is a known complication following neck dissection and occurs in 1 to 2 per cent of patients. After left-sided neck dissection, chylothorax is uncommon and bilateral chylothorax is even rarer. Chylothorax is encountered following certain thoracic procedures, especially superior mediastinal dissection for thyroid cancer treatment. We discuss in detail the successful management of a complicated case.

Conclusion: We discuss various management options for this condition, and we summarise its successful management within our department.

Key words: Neck Dissection; Chylothorax; Chyle; Post Operative Complication

Introduction

Left-sided neck dissection is performed to clear metastatic disease in the neck, arising due to head and neck primary disease or when there is an unknown primary tumour in the neck. It is performed either as a primary procedure or following radiotherapy as salvage treatment.

Chyle leakage is a known complication of left neck dissection, occurring in 1–2 per cent of patients.[1] Chylothorax is rare compared with simple chyle leakage.[2]

Bilateral chylothorax was first reported by Stuart in 1907.[3] Since then, 19 cases have been described in the English language literature.[4]

We discuss the investigation and management of a patient with the rare complication of chylothorax.

Case report

A 58-year-old man developed the rare but potentially life-threatening complication of chylothorax following a left-sided neck dissection.

This patient presented to our department with a one-month history of a left-sided neck mass. In addition, he also complained of oral aphthous ulcers. He was a non-smoker and had had no other significant ENT symptoms related to the upper aero-digestive tract. He gave a history of tonsillectomy in childhood.

On examination, there was a 3×3 cm, level two neck mass on the left side. The patient's oral cavity and oropharynx were normal, with no evidence of aphthous ulcers.

Flexible nasal endoscopy showed a normal larynx and pharynx.

Fine needle aspiration (FNA) in the clinic was initially purulent but showed no microbial growth. All routine blood tests were normal.

A chest X-ray was reported to be normal.

Repeated FNA showed the presence of a few atypical squamous cells within the aspirate, potentially squamous cell carcinoma.

An ultrasound scan of the neck demonstrated a left-sided, 3 cm, cystic, necrotic lymph node but no other lymphadenopathy. Computed tomography (CT) confirmed the presence of a left-sided, level II, enlarged lymph node and also suggested asymmetry of the left pyriform fossa and a focal enlargement in the posterior lateral left tongue base.

In light of the CT findings and FNA results, an urgent panendoscopy and biopsy were performed. The panendoscopy revealed abnormal, ulcerated tissue in the left tonsillar area. In addition to the left tonsillar area, the left pyriform fossa and the left tongue base were biopsied.

From the results of the investigations, we made a clinical diagnosis of a left-sided, oropharyngeal squamous cell carcinoma, staged as tumour stage one, node stage one and metastasis stage zero.

After discussion at the local multidisciplinary team clinic, the patient was offered primary surgery with post-operative radiotherapy or primary chemoradiotherapy. He preferred the non-surgical treatment option.

On reviewing the patient following radiotherapy, he had a persistent, hard, left-sided neck lump, which was confirmed to be residual disease. Hence, a left-sided modified radical neck dissection was offered to the patient.

This procedure was performed, sparing the sternocleidomastoid muscle, internal jugular vein and accessory nerve. The thoracic duct was identified and secured with silk sutures during the operation.

Immediate post-operative recovery was uneventful. However, on the third post-operative day chyle was noticed

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in the neck drains. During this period, the patient described a mid-sternal chest pain and shortness of breath. A cardiac cause for the chest symptoms was excluded, but a chest X-ray confirmed bilateral pleural effusions (Figure 1). A medical opinion was obtained, and accordingly the patient underwent a pleural tap, which showed chylothorax.

Initial conservative management of the chyle leak appeared successful. Unfortunately, the patient continued to have a collection in the left neck following neck drain removal. This was managed conservatively, in the form of aspirating the collection every day for a week, a fat-free diet, and pressure dressings. A total of 120–150 ml of chyle was aspirated each day, which gradually reduced over a week.

In addition, we prescribed octreotide subcutaneous injections over a 14-day period. The chylothorax was aspirated to dryness on one occasion by the respiratory medical team, and progress was monitored by serial chest X-rays.

Thoracic duct ligation and surgical exploration were discussed with the patient; however, due to the low volumes of chyle aspirated, conservative management was preferred.

At the time of writing, the patient had been followed up for 12 months and was symptom-free, with no recurrence of local or regional disease.

Discussion

Chyle leakage is not an uncommon complication following left-sided neck dissection, but chylothorax is rare and may be life-threatening.

The pathophysiology of chylothorax that develops following neck dissection has not been fully elucidated, but two possible mechanisms have been proposed. According to one hypothesis, chyle escaping from the cervical region flows directly into the mediastinum, leaks into the thoracic cavity and is retained in the pleural space.[5] This theory holds good when there is notable chyle leakage in the neck. In the second hypothesis, ligation of the thoracic duct causes the intramural pressure in the thoracic duct to increase, and with the presence of negative intrathoracic pressure during inspiration, extravasation of chyle into the mediastinum develops. The increased hydrostatic pressure, direct pleural maceration by the chyle and backflow through dilated intrapulmonary lymphatic vessels contribute to the retention of the chyle in both thoracic cavities.[2]

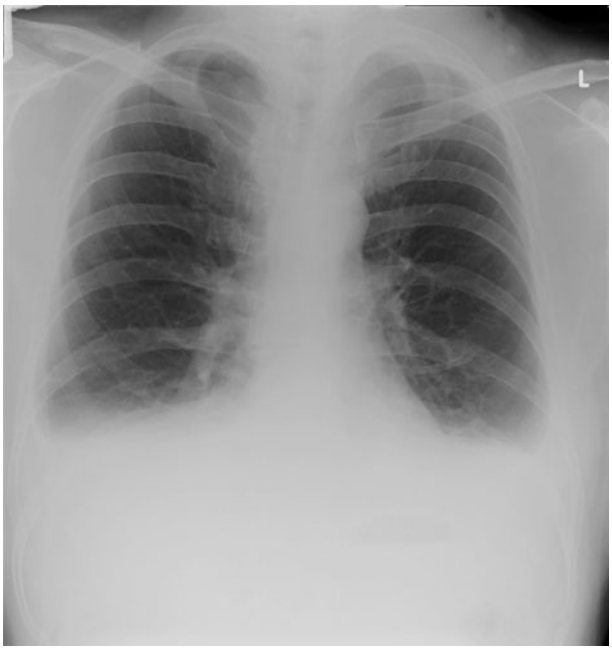

FIG. 1
Chest X-ray showing bilateral pleural effusion.

It is not certain whether pre-operative radiotherapy constitutes a risk factor for the development of chylothorax.[1] Crumley and Smith reported that conservative treatment could be difficult in patients who have received primary radiotherapy.[6]

In our case, chyle leakage was noted during the procedure, and the thoracic duct was ligated to prevent chyle leakage in the neck and the possible development of a chyle fistula. This could be the reason that our patient's initial post-operative recovery period was uneventful. It was only on the third post-operative day that we noticed chyle in the cervical drain. The patient subsequently developed chest pain and shortness of breath secondary to a chylothorax.

Chyle leakage in the neck is primarily managed conservatively.[4] The basic principle in treating chyle leakage is to drain the accumulated fluid, reduce chyle formation and supplement any nutritional deficiency.[7] These principles were followed during our patient's management.

In spite of radiation to his neck, our patient's condition was managed conservatively. Chyle was aspirated on a daily basis from his neck, followed by pressure dressings. The amount aspirated from the neck reduced over a period of seven days. The chest team performed thoracocentesis on one occasion to relieve the patient's acute symptoms. The patient was also changed to a low-fat diet rich in medium-chain triglycerides, under the supervision of the dietician. Medium-chain triglycerides reduce chyle formation as they can be selectively absorbed through the portal venous system, thus bypassing the intestinal lymphatic channel.[8]

In addition, our patient received octreotide on a regular basis for 12 days, until the neck was dry.[9] Octreotide is a somatostatin and slows the rate of lymph flow, although the exact mechanism of action is not well defined.

- **Chylothorax is a rare but potentially life-threatening complication of neck dissection**
- **The diagnosis should be considered in patients with chest symptoms after neck dissection**
- **There are no consensus guidelines for managing chylothorax**

Surgical intervention was an option in our patient, should these measures have failed. The time limit for conservative management has never been discussed in the past; hence, it was our patient's positive clinical response which encouraged us to continue with primary conservative management.

When conservative management fails to control lymph flow, surgical interventions are employed to achieve definitive closure of the thoracic duct leak, but this treatment is controversial. The generally accepted indications for surgery are persistent chylothorax for more than two weeks despite conservative treatment, chyle drainage of greater than 11 per day for five days, or severe metabolic complications.[10]

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In our patient, bilateral chylothorax and chyle leakage in the neck were successfully managed conservatively, with multidisciplinary input. The rarity of this condition means that it is easily overlooked; however, the diagnosis should be considered in any patient who experiences acute chest discomfort or dyspnoea following left neck dissection. Early diagnosis and appropriate management is important for a favourable outcome.

References

1 Spiro JD, Spiro RH, Strong EW. The management of chyle fistula. *Laryngoscope* 1990;**100**:771–4
2 Jabbar AS, Al-Abdulkareem A. Bilateral chylothorax following neck dissection. *Head Neck* 1995;**17**:69–72
3 Stuart WJ. Operative injury of the thoracic duct in the neck. *Edinb Med Journal* 1907;**22**:301–6
4 Tsukahara K, Kawabata K, Mitani H, Yoshimoto S, Sugitani I, Yonekawa H *et al*. Three cases of bilateral chylothorax developing after neck dissection. *Auris Nasus Larynx* 2007;**34**:573–6
5 Weider WA, Steiner RM. Roentgenographic demonstration of intra-pulmonary and pleural lymphatics during lymphangiography. *Radiology* 1971;**100**:533–9
6 Crumley RL, Smith JD. Postoperative chylous fistula prevention and management. *Laryngoscope* 1976;**86**:804–13
7 Srikumar S, Newton JR, Westin TA. Bilateral chylothorax following left-side radical neck dissection. *J Laryngol Otol* 2006; **120**:705–7
8 Ng RS, Kerbavaz RJ, Hilsinger RL Jr. Bilateral chylothorax from radical neck dissection. *Otolaryngol Head Neck Surg* 1985;**93**:814–17
9 Kalomenidis I. Octreotide and chylothorax. *Curr Opin Pulm Med* 2006;**12**:264–7
10 Selle JG, Snyder WH 3rd, Schreiber JT. Chylothorax: indications for surgery. *Ann Surg* 1973;**110**:245–9

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