Octreotide for Conservative Management of Intractable High Output Post Operative Chylous Fistula: A Case Report

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Abstract A case of high output post neck dissection chylous fistula is presented, which was successfully managed conservatively with octreotide; a long acting somatostatin analogue. Routine measures had failed, and secondary complications precluded thoracoscopic ligation. We discuss the spectrum of problems associated with chylous fistula and review the rationale behind the use of octreotide.

Keywords Chyle · Chylous fistula · Octride · Octreotide · Neck dissection · Complication

Introduction

Cervical chylous leak occurs as a result of injury to the main thoracic duct or its principal tributaries during neck dissection (1–2% cases). Unless controlled, it may lead to significant nutritional and electrolyte depletion, immunocompromise and chylothorax due to pleural dome erosion. A preventive strategy with careful dissection and intraoperative identification and control of thoracic duct injuries remains the best option.

Conservative management of chyle leak consists of dietary modification using medium chain triglycerides and total parenteral nutrition [1], closed wound suction and pressure dressings [2], and tetracycline sclerotherapy [3]. Fibrin sealants and drugs such as etilefrine have also been

used occasionally. It is generally believed that conservative measures are unsuccessful in high output fistulae (with daily chyle loss of 1,000 ml or more) and when such measures fail, direct duct ligation through video assisted thoracoscopy (VATS), thoracotomy or transabdominal approach has been recommended.

The use of somatostatin and its long acting analogue octreotide has been described for the control of postoperative chylothorax. Very few anecdotal reports have documented their efficacy in controlling low volume chylous fistulae.

Case report

A 55 year old female patient was treated for squamous cell carcinoma (stage IV, T4 N2b M0) of the left alveolus and gingivo-buccal sulcus, with wide excision and left radical neck dissection (Fig. 1) and reconstruction with bipaddled Pectoralis Major Myocutaneous (PMMC) flap. Intraoperatively, chyle leak was identified in the left supraclavicular region, which was repaired and confirmed by placing the patient in 'head low' position and positive pressure ventilation.

On the third postoperative day, 1,600 ml of turbid and slightly milky collection was noted in the drains. Significant tenting of the cervical skin flaps had occurred along with maceration along the suture line and soakage of dressings. The fluid was analysed biochemically, and the composition suggested chyle (triglycerides 208 mg/dl, cholesterol 265 mg/dl, lymphocytes 88%). This was further complicated by persistent cough and hypoxemia on the fifth postoperative day with chest X-ray (Fig. 2) and ultrasound revealing pleural effusion. Pleurocentesis yielded, 200 ml of straw coloured fluid with biochemical values same as above, confirming secondary chylothorax.

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Fig. 1 Intra operative photograph following radical neck dissection. Notice the low level at which the internal jugular was ligated; a possible reason for thoracic duct injury. Though the repair was confirmed intra operatively, the ligature probably slipped due to neck movements in the post op period

Fig. 2 X-ray, AP view of chest, showing evidence of pleural effusion, collapse and consolidation in the left lung

A high resolution CT of the thorax showed pneumonic consolidation and collapse of the left lung (Fig. 3). In addition the patient had significant hyponatremia (sodium 131 meq/l), hypoalbuminemia (serum albumin 1.8 g/dl), lymphopenia (lymphocytes 9%).

The patient refused parenteral nutrition, and therefore nasogastric feedings with medium chain triglycerides (Simyl MCT oil) was initiated. Wound support was given

with non pressure dressings as the outer paddle of the PMMC flap had begun to necrose.

The neck wound was re explored on the 11th post operative day and surgicel soaked with 20% tetracycline was applied for supraclavicular wound bed sclerosis as the leak could not be localised. While this controlled the chylothorax, the output from the neck wound did not reduce any significantly and continued to remain around 900–1,000 ml/day over the next few days.

Octreotide therapy (Octride, Sun pharma) was initiated on the 22th day with a dose of 100 mcg 8 hourly administered subcutaneously. Drainage decreased to 250 ml/day over the next three days and to less than 30 ml by 30th post operative day. Vomiting was the only adverse effect noted which was managed with antiemetics. Octreotide was tapered and stopped over the next 6 days, and full enteric diet was resumed without recurrence of the leak. Hyponatremia and hypoalbuminemia were managed appropriately with infusions. Pneumonitis was treated with levofloxacin and metronidazole after sputum culture (positive for *Klebsiella pneumoniae*). Figure 4 shows the appearance of the neck wound following control of the chylous fistula. The necrosed paddle of the PMMC was debrided. Patient refused secondary skin grafting procedures, and therefore the wound was regularly dressed to allow for healing by secondary intention.

Patient was discharged on the 40th postoperative day without any further complications. She has been under follow up for 48 months and has remained disease free.

Discussion

Octreotide acts directly on vascular somatostatin receptors and minimises lymph fluid excretion. By increasing splanchnic arteriolar resistance and decreasing gastrointestinal blood flow, it indirectly reduces lymphatic flow. Some authors mention that octreotide blocks pancreatic and biliary secretions by inhibiting serotonin and other gastrointestinal peptides [4, 5]. Though the exact mechanism appears unclear, its multiple gastrointestinal effects and reduced splanchnic blood flow may decrease thoracic duct flow and the triglyceride content of chyle [6].

Ulibarry et al. were the first to describe management of lymphatic leaks with intravenous somatostatin [7]. Subsequently, Valentine et al. [7] and Nyquist et al. [8], demonstrated the effectiveness of octreotide in controlling postoperative lymphatic leak following neck dissection for thyroid cancer. These reports appear to indicate effectiveness in managing fistulas with moderate leakage. The high output fistulas leaking a litre or more of chyle in a day have been shown to be refractory to traditional conservative measures in about 48% of cases, and therefore in these

Fig. 3 Contiguous slices in mediastinal window of high resolution CT scan of thorax shows evidence of consolidation with air bronchogram (thin arrow) and collapse (thick arrows) in the left lung

Fig. 4 Appearance of the neck wound after control of chyle leak

patients, early surgical intervention in the form of video assisted thoroscopic duct ligation has been advised [9]. The case presented herein, demonstrates the effectiveness of octreotide, even in high output fistulae, which has not been documented hitherto. Further, thoroscopic ligation requires, single lung double lumen ventilation of the left lung, which could not be contemplated in this case, as she had pneumonic consolidation and collapse of the lower lobe of left lung.

Octreotide may be administered subcutaneously or intravenously. The dosage is initially 100 mcg 8 hourly which is the minimum required for treatment of pancreatic fistula and may reach 400 mcg 8 hourly in continuous perfusion [10]. To the best of our knowledge there are no comparative studies highlighting the effectiveness of one over the other. The adverse effects include vomiting, arrhythmias, injection site pain or hematoma, headache, gastro intestinal upsets and hyper or hypoglycemia [6].

Chyle output is particularly dependent upon the amount of dietary fat ingested. Medium chain triglycerides (MCT) are absorbed into the portal circulation directly and do not contribute to chylous output. While Ramos and Faintuch [1] observed superior fistula resolution with total parenteral nutrition, as against fat free nasogastric feeds, Al-Khayat [5] noted satisfactory outcomes with nasogastric feeding and MCT. Total parenteral nutrition requires a dedicated intravenous line and apart from being expensive, is fraught with risks of infection.

In the event of failure of conservative measures, *percutaneous trans abdominal embolisation or disruption of the thoracic duct* has been advocated for postsurgical chylothorax [11, 12]. Back up thoracic duct ligation however may be necessary in those failing to respond.

Conclusion

The rarity of occurrence of post neck dissection chylous fistulae makes it difficult to evaluate the usefulness of octreotide through prospective controlled trials and hence evidence is essentially anecdotal and also based on extrapolation of data related to its use in chylothorax. Octreotide also has never been used in the absence of dietary measures. Further, clarification is also needed regarding how long octreotide therapy should be given before considering it ineffective, should there be an initial lack of response. Considering the difficult-to-manage nature of post operative chyle leaks, significant associated morbidity, and the need to manage it conservatively as far as possible, it may be prudent to consider adding octreotide as an adjuvant and not as a replacement to routine measures.

Competing interests None declared.

References

1. Ramos W, Faintuch J (1986) Nutritional management of thoracic duct fistulas. A comparative study of parenteral versus enteral nutrition. *J Parenter Enter Nutr* 10:519–521
2. Spiro JD, Spiro RH, Strong EW (1990) The management of chyle fistula. *Laryngoscope* 100:771–774
3. Kassel RN, Havas TE, Gullane PJ (1987) The use of topical tetracycline in the management of persistent chylous fistulae. *J Laryngol Otol* 16:174–178
4. Kilic D, Sahin E et al (2005) Octreotide for treating chylothorax after cardiac surgery. *Tex Heart Inst J* 32(3):437–439
5. al-khayat M, Kenyon GS, Fawcett HC, Powell-Tuck J (1991) Nutritional support in patients with low volume chylous fistula following radical neck dissection. *J Laryngol Otol* 105:1052–1056
6. Buck Marcia L (2004) Octreotide for the management of chylothorax in infants and children. *Pediatr Pharm* 10(10) <http://www.medscape.com/viewarticle/494653>. Accessed 26 April 2011
7. Valentine CN, Barresi R, Prinz RA (2002) Somatostatin analog treatment of a cervical thoracic duct fistula. *Head Neck* 24(8): 810–813
8. Nyquist G, Abdulrahman Hagr, Sobol SE, Hier MP, Black MJ (2003) Octreotide in the medical management of chyle fistula. *Otolaryngol Head Neck Surg* 128(6):910–911
9. Kumar S, Kumar A, Pawar DK (2004) Thoracoscopic management of thoracic duct injury: is there a place for conservatism? *J Postgrad Med* 50:57–59
10. Gómez-Caro Andrés A, Marrón Fernández C et al (2004) Octreotide for conservative management of postoperative chylothorax. *Arch Bronconeumol* 40:473–475
11. Boffa DJ, Sands MJ, Rice TW, Murthy SC, Mason DP, Geisinger MA, Blackstone EH (2008) A critical evaluation of a percutaneous diagnostic, treatment strategy for chylothorax after thoracic surgery. *Eur J Cardiothorac Surg* 33(3):435–439
12. Cope C (2004) Management of chylothorax via percutaneous embolization. *Curr Opin Pulm Med* 10(4):311–314