» **Case Report** «

Chylous Ascites after Abdominal Aortic Aneurysm Repair

Shinichi Ohki, MD, Soki Kurumisawa, MD, and Yoshio Misawa, MD, PhD

A 73-year-old man was transferred for treatment of abdominal aortic aneurysm. He had no history of abdominal surgeries. Grafting between the infra-renal abdominal aorta and the bilateral common iliac arteries was performed. Proximal and distal cross clamps were applied for grafting. He developed chylous ascites on the 5th post-operative day, 2 days after initiation of oral intake. Fortunately, he responded to treatment with total parenteral hyper-alimentation for 10 days, followed by a low-fat diet. There was no recurrence of ascites.

Keywords: chylous ascites, aortic aneurysm repair, Y-grafting

Introduction

Abdominal aortic aneurysm is treated with grafting by laparotomy or with endovascular surgery. Endovascular surgery is less invasive than grafting, but it has a potential risk of different types of re-interventions. Acute postoperative complications after grafting include paralytic ileus, renal failure, and lower limb ischemia. We experienced a rare case of chylous ascites after abdominal aortic aneurysm repair by laparotomy.

Case Report

A 73-year-old man was transferred to our hospital because of abdominal aortic aneurysm. He was non-diabetic, but he had a 30-year history of treatment for hypertension and a 20-year history of dyslipidemia. His Brinkman index was 800 and he had no history of abdominal surgeries. His blood cell count was within normal limits and HbA1C was 5.2%. Renal and liver function was also within normal limits. The serum total

protein level was 6.5 g/dl. A chest X-ray showed a cardiothoracic ratio of 43% with sharp costophrenic angles. No abnormal masses were found in bilateral lung fields. Abdominal computed tomography showed an infra-renal type of abdominal aortic aneurysm that was 50 mm in diameter with mural thrombus (Fig. 1). He gave informed consent for abdominal aortic aneurysm repair by laparotomy.

After minimal dissection at the proximal and distal sites of cross clamping, snaring of the abdominal aorta and the bilateral common iliac arteries was applied around these sites. Proximal and distal cross clamping, which is our standard method, was used for grafting. Grafting between the infra-renal abdominal aorta and the bilateral common iliac arteries was performed. The aneurysm wall was partially removed and laid open.

The patient suffered from abdominal distention on the 5th post-operative day, 2 days after initiation of oral intake. Laboratory findings showed a white cell count of 6500/ μ L, and an elevated C-reactive protein level of 4.03 mg/dl. A computed tomographic scan of the abdomen showed fluid collection in the abdominal cavity (Fig. 2). The abdominal cavity was temporarily punctured, and the total amount of drainage revealed 1900 ml of serous milky fluid. Analysis of the fluid showed that the triglyceride level was 366 mg/dl and lipase level was 89 U/L. He responded to treatment with total parenteral hyper-alimentation for 10 days, followed by a low-fat diet. The patient's elevated C-reactive protein levels returned to normal. Other laboratory findings including electrolytes and serum albumin did not show significant serial changes. He was discharged on the 24th post-operative day. Henceforth, he has experienced no recurrence of ascites.

Discussion

The long-term prognosis after grafting for abdominal aortic aneurysm is acceptable. Aorto-intestinal fistula with or without an anastomotic pseudo-aneurysm, graft occlusion, and strangulation ileus might require surgical interventions in the chronic phase.

Division of Cardiovascular Surgery, Jichi Medical University, Shimotsuke, Tochigi, Japan

Received: September 14, 2015; Accepted: November 20, 2015
Corresponding author: Yoshio Misawa, MD, PhD. Division of Cardiovascular Surgery, Jichi Medical University, 3311-1 Yakushiji, Shimotsuke, Tochigi 329-0498, Japan
Tel: +81-285-58-7368, Fax: +81-285-44-6271
E-mail: tcvmisa@jichi.ac.jp

Fig. 1 Preoperative abdominal computed tomography. An infra-renal type of abdominal aortic aneurysm that is 50 mm in diameter with mural thrombus.

Cisterna chyli injury during open abdominal aortic aneurysm repairs is a common cause of postsurgical chylous ascites. Barakat and colleagues showed that 81% of all postsurgical chylous ascites occurred following open abdominal aortic aneurysm surgery.¹⁾ Other surgeries that involve postsurgical chylous ascites include gastrectomy, duodenectomy, nephrectomy, and Wilm's tumor resection.²⁾ The cisterna chyli is situated on the front body of the second lumbar vertebra, to the right side of and behind the abdominal aorta.³⁾ Operative procedures at the proximal abdominal aorta can cause an injury to the cisterna chyli itself or some trunks and glands draining into the cisterna chyli. As the cisterna chyli is not always identified during surgery, preoperative identification of the assumed cross clamping site and careful operative procedures including minimal dissection at the snaring or cross clamping site are required to prevent the complication.

Treatments for chylous leakage depend on the severity of the injury. Conservative treatment, including paracentesis, fasting, and total parenteral nutrition, is used as the first option for treatment of chylous ascites.⁴⁻⁶⁾ Surgical treatment is preferred for the elderly and infant because of their vulnerability and intolerance to prolonged chylous leakage.⁶⁾ A diet of medium-chain triglyceride oil and octreotide administration might be effective for treatment of this condition.³⁾ Some cases require surgical interventions, such as direct ligation of the chyle leak. Uchinami and colleagues reported a unique case with a retroperitoneal lymphocele after abdominal aortic aneurysm repair.⁷⁾ They successfully performed laparoscopic ligation of the leaking lymphatics. A peritoneovenous shunt should be the final step for treatment.^{2,4)}

Our patient responded to conservative treatment within 3 weeks. Therefore, injury to the cisterna chyli might be limited to lymphatic branches.

Fig. 2 Postoperative abdominal computed tomography. Fluid collection in the abdominal cavity is observed.

Conclusions

A 73-year-old man developed chylous ascites after open abdominal aortic aneurysm repair. He responded to treatment with total parenteral hyper-alimentation for 10 days, followed by a low-fat diet.

Disclosure Statement

The authors declare no conflicts of interest regarding the publication of this paper.

Author Contributions

Study conception and writing: SO, Data collection: SK, Investigation: YM, Critical review and revision: all authors, Final approval of the article: all authors, Accountability for all aspects of the work: all authors

References

- 1) Barakat HM, Shahin Y, McCollum P. Chylous ascites complicating elective abdominal aortic aneurysm repair: case report and review of treatment options. *Vasc Endovascular Surg* 2012; **46**: 682-5.
- 2) Talluri SK, Nuthakki H, Tadakamalla A, et al. Chylous ascites. *N Am J Med Sci* 2011; **3**: 438-40.
- 3) Gray H. The lymphatic system. In: Pick TP, Howden R eds. *Anatomy*. 15th ed. London: Chancellor Press, 1994: 602-16.
- 4) Haug ES, Saether OD, Odegaard A, et al. Chylous complications after abdominal aortic surgery. *Int Angiol* 1998; **17**: 244-7.
- 5) Meinke AH, Estes NC, Ernst CB. Chylous ascites following abdominal aortic aneurysmectomy. Management with total parenteral hyperalimentation. *Ann Surg* 1979; **190**: 631-3.
- 6) Kitahara H, Yoshitake A, Hachiya T, et al. Management of aortic replacement-induced chylothorax by lipiodol lymphography. *Ann Vasc Dis* 2015; **8**: 110-2.
- 7) Uchinami M, Morioka K, Doi K, et al. Retroperitoneal laparoscopic management of a lymphocele after abdominal aortic surgery: a case report. *J Vasc Surg* 2005; **42**: 552-5.