Case Report
Étude de cas

Conservative management of chylous ascites complicating aortic surgery: a case report

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Chylous ascites is an uncommon complication of aortic surgery. In the past, operative management was the standard therapy. A 62-year-old man with chylous ascites was treated successfully with paracentesis and total parenteral nutrition alone. A review of the recent literature suggests that a preliminary course of conservative therapy can limit the need for operative intervention to those who fail the primary conservative treatment.

L'ascite chyleuse est une complication peu fréquente d'une intervention chirurgicale à l'aorte. Dans le passé, on traitait habituellement le problème par intervention chirurgicale. Un homme de 62 ans atteint d'ascite chyleuse a été traité avec succès par paracentèse et nutrition parentérale totale seulement. Une recension des écrits récents indique que des traitements conservateurs préliminaires peuvent limiter la nécessité de soumettre à une intervention les patients chez lesquels le traitement conservateur primaire échoue.

Chylous ascites is a rare complication of aortic surgery. Twenty-seven cases have been reported in the world literature to date.[1] Williamson and Provan[2] reported a case at our institution in 1987 that followed a transabdominal aortofemoral bypass procedure. Their patient underwent laparotomy and repair of the lymph leak after failing a trial of low-fat diet. We report a second case at our institution. The patient was managed successfully with paracentesis and total parenteral nutrition alone.

Case report

A 62-year-old diabetic ex-smoker presented with gangrenous changes in his left great toe and recent onset of night pain in his left foot. He had previously undergone a right-to-left femorofemoral bypass with right femoropopliteal bypass for a critically ischemic right foot. On this occasion a palpable pulse was absent in his crossover graft. A translumbar angiogram confirmed graft thrombosis.

A transabdominal left aortofemoral bypass with extended profundaplasty was done to restore inflow. His postoperative course was uncomplicated. A full diet was resumed on postoperative day 5, and he was discharged home on day 7. At follow-up 2 weeks later his incisions had healed and there was no evidence of a lymph leak in his left groin.

Four weeks later he presented with abdominal distension, anorexia and abdominal pain. Over the preceding 2 weeks his abdominal girth had increased progressively. Abdominal ultrasonography showed "marked ascites." Paracentesis yielded 5 L of milky white, odourless fluid. Analysis indicated a high lymphocyte count and elevated chylomicron and triglyceride levels consistent with chylous ascites. Total parenteral nutrition and a clear fluid diet were instituted for 3 weeks. Computed tomography (CT) of the neck and duplex ultrasonography of the cervical veins showed no evidence of obstructive proximal lymphadenopathy or cervical venous thrombosis. Ultrasonography repeated before total parenteral nutrition was withdrawn showed no residual ascites. He was then started on an unrestricted diet and discharged home 4 days later. At follow-up 6 weeks later there was no evidence that ascites had reaccumulated.

Discussion

Chylous ascites after abdominal aortic surgery is exceedingly rare; only 27 cases have been reported previously. Pabst and colleagues[1] recently

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reported 5 cases of their own and reviewed 22 previously published cases. Progressive abdominal distension was the commonest presenting symptom in their series (96% of patients), and the mean time of onset was 18.4 days after surgery. At this point most patients have been discharged home, as was our patient. Ascites may be detected on physical examination by the astute clinician and confirmed by abdominal ultrasonography. Paracentesis is the ultimate diagnostic test. A sterile, odourless, milky white fluid is recovered that is rich in protein, triglycerides and lymphocytes.[1,3] Typically, several litres of chyle must be removed for a therapeutic effect.

Postoperative chylous ascites results from a fistula between the cisterna chyli or intestinal lymphatics and the peritoneal cavity.[1,4,5] In at least 50% of the population, the cisterna chyli forms around the posteromedial aspect of the aorta at the level of the renal arteries. In the remainder, a true cisterna chyli is absent, being replaced by a retroperitoneal lymphatic plexus that coalesces into a thoracic duct. Dissection of the infrarenal aorta places these structures at risk of laceration or transection. Small lymph leaks are commonly seen intraoperatively during periaortic dissection.[5,6] These should be ligated or clipped,[1,6] but they rarely result in chyloperitoneum, likely because of the presence of extensive local collateral lymph channels.[3,5] Disruption of larger lymphatic channels may not be as well compensated, however. Also, prior trauma to the cervical thoracic duct, lymphatic obstruction by malignant cervical nodes or subclavian vein thrombosis (as seen with previous central lines) may be a co-requisite for chyloperitoneum,[1] by obstructing lymphatic outflow from the abdomen. These were excluded in our patient by a CT scan and duplex venous studies of the neck.

Although the mechanism of chyloperitoneum in our patient is difficult to understand, the delayed presentation is common.[1,3–5] Experimental studies show that flow through lymphatic channels in the fasting state is less than 1 mL/min but can increase to 225 mL/min after a fatty meal. Our patients typically resume a full diet on the 4th to 5th postoperative day and are discharged a few days later. It may therefore take several days or weeks for the typical multilitre fluid volume seen with this condition to accumulate.

Repeated complete paracentesis is pivotal to symptomatic relief of abdominal distension and, often, dyspnea.[1,7] A reduction in chyle production can be achieved simultaneously with a high-protein, low-fat diet or total parenteral nutrition.[5,7] Long-chain triglycerides are transported through the lymphatic system from the intestine to the bloodstream as chylomicrons. Medium-chain triglycerides, however, are absorbed directly into the portal circulation bypassing the lymphatics. An oral medium-chain-triglyceride diet is a reasonable first step[5] in decreasing lymph production to promote healing of injured lymphatics. Total parenteral nutrition can then be reserved for when such treatment fails. In our review of the literature we found no evidence that either treatment is more effective than the other in decreasing lymph production. Williamson and Provan,[2] however, reported 100% success in five cases treated initially with 2 weeks of total parenteral nutrition followed by a low-fat diet once the ascites has begun resolving. Total parenteral nutrition offers the advantage of correcting fluid and electrolyte imbalances more rapidly but in the longer term runs the risk of line sepsis, a potentially serious complication in patients with recently placed vascular prostheses.[5] Pabst and colleagues[1] suggested a treatment algorithm that starts with 2 weeks of total parenteral nutrition, followed by conversion to a low-fat medium-chain-triglyceride diet if the ascites diminishes. Complete resolution of ascites occurred in all five patients treated by their group within a mean of 64 days according to this algorithm. This finding influenced our decision to use total parenteral nutrition initially as well as for patients in whom dietary treatment had failed.[2]

Surgery to close the lymph leak should be reserved for those in whom dietary treatment or total parenteral nutrition has failed. According to the review of Pabst and colleagues,[1] of the 22 previously published cases of chylous ascites, 60% resolved with conservative management. In those in whom conservative treatment had failed, surgical ligation of the injured lymphatics was 100% successful (five of five cases) and peritoneovenous shunting was 80% successful (four of five cases). The fifth patient who had peritoneovenous shunting died of sepsis from an infected shunt, which also carries the risk of disseminated intravascular coagulopathy.[6] For these reasons shunting is better treatment for high-risk surgical patients not able to tolerate a second laparotomy.[1,2]

Conclusions

Chylous ascites is a rare complication of aortic surgery. Most patients with this condition can be managed successfully with repeated paracentesis and either a low-fat, medium-chain-triglyceride diet or total parenteral nutrition. There is no evidence that total parenteral nutrition is better than a low-fat diet initially. Those patients who do not respond to total parenteral nutrition should undergo repeat laparotomy for operative ligation of the leaking lymphatics. Patients

medically unfit for laparotomy can be treated successfully with peritoneovenous shunting, which carries a small risk of sepsis from shunt infection.

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