Abdominal Aortic Aneurysm Complicated by Intestinal Malrotation

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Intestinal malrotation (IM) is an anomaly of fetal intestinal rotation that usually presents in the first month of life; it is rare for malrotation to present in adulthood. Furthermore, the presentation of IM in conjunction with Abdominal aortic aneurysm is extremely rare and may require consideration with respect to the surgical approach and exposure of the abdominal aorta. We herein report a case of an abdominal aortic aneurysm complicated by intestinal malrotation.

Keywords: multi-detector computed tomography, congenital

Introduction

Abdominal aortic aneurysm (AAA) is a common vascular disease, but coexistence of anomalies of adjacent organs, such as retroaortic renal vein,1) double inferior vena cava,1,2) preaortic iliac vein confluence,1,2) horseshoe kidney,3) or ectopic kidney,4) need the special considerations. Intestinal malrotation (IM) is an anomaly of fetal intestinal rotation, occurring in about one in 6000 live births.5) IM usually presents in the first month of life;6) and it is rare for malrotation to present in adulthood.7) IM can cause the abnormality of the position of the intestinal tract and the mesenteric vessels, so AAA combined IM can have more risk of mesenteric vessel injury. It is extremely rare that AAA combines IM, and there has been only one case reported in the English literature to our knowledge.8) We herein report a case of abdominal aortic aneurysm presented with intestinal malrotation.

Case Report

An 82-year-old male was admitted because of a back pain. A pulsatile mass or tenderness was not evident by abdominal palpation. He had no history of a fever or abdominal trauma. The peripheral blood count and biochemical test results were within the normal range, except for a slight elevation of the lactate dehydrogenase level. Multi-detector computed tomography (MDCT) demonstrated an abdominal aortic aneurysm in the juxtarenal portion, which projected to left side and measured 5.9 cm × 3.1 cm, and right common iliac arterial aneurysm, measured 2.5 cm (Fig. 1a, b). Retrospectively, although the third portion of duodenum was normally located on the dorsal side of the superior mesenteric vessels, ascending and descending colon were not fixed at retroperitoneum (Fig. 1b, c).

Because AAA was a saccular aneurysm and symptomatic, urgent surgery was performed through a midline incision and a laparotomy revealed the small intestine to adhere to the retroperitoneum and it was located in upper abdomen, while almost all of the large intestine was free from the retroperitoneum and located in the pelvic cavity (Fig. 2a). Because the mesocolon was already free from the retroperitoneum, the peritoneum was incised along the right side of the adhesion of the small intestine and peritoneum, medial rotation of the right-sided mesentery and Kocher’s maneuver were successful in easily exposing the whole body and neck of the aneurysm, paying attention to avoid any injury of the intestine, ureter, veins and arteries (Fig. 2b). Following systemic heparinization, suprarenal cross-clamping, renal perfusion with cold saline and aortotomy, aorto-iliac reconstruction with a synthetic bifurcated graft and reconstruction of the inferior mesenteric artery were performed. The retroperitoneum was repaired to fix the small intestine. The patient’s postoperative course was uneventful, without any elevation of the serum creatinine level, and the patient was discharged home fourteen days after the operation.
Kuma S, et al.

Discussion

Intestinal malrotation (IM) occurs as a result of the arrest of rotation of the intestines during fetal development. Most patients present with bilious vomiting in the first month of life, although approximately 0.2%–0.5% of patients present with symptoms later in life. In general, adults with IM may develop acute or chronic obstructive symptoms or be diagnosed incidentally, such as in the present report. Although IM can be diagnosed on standard upper gastrointestinal series or by barium enema examination, IM can be diagnosed on CT based on the anatomic location of a right-sided small intestine and left-sided colon, an abnormal relationship of the superior mesenteric vessels and aplasia of the uncinate process of the pancreas. However, in the present case, such CT findings were not immediately recognized due to the rareness of this disease in adults. Providing a comprehensive film reading is important in order to detect the coexistence of anomalies of adjacent organs.

In cases of IM, the selection of the surgical approach to the aorta requires careful consideration due to the presence of an abnormality in both the position of the intestinal tract and the mesenteric vessels. In patients with a normal anatomy, mobilizing the small intestine and mesentery to the upper right side and creating a vertical incision in the retroperitoneum can be used to easily expose the aorta. However, this approach may not be feasible in patients with IM, as it may injure the mesocolic vessels. Instead, the use of a right side approach to the aorta, as described in the case reported by Bhama, is very easy because the entire intestine and mesentery and/or mesocolon are free and displaced to the left side of the aorta. In the present case, a good field of view was provided by using a right side approach. Regardless of whether or not a preoperative diagnosis of IM is made, a retroperitoneal approach is nevertheless considered to be a feasible option for the treatment of such cases.

Conclusion

We herein presented a case of AAA combined with intestinal malrotation.

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Disclosure Statement

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References