Paraprosthetic Extravasation of Enteric Contrast: A Rare and Direct Sign of Secondary Aortoenteric Fistula

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An aortoenteric fistula is a communication between the aorta and the gastrointestinal tract. This condition is a rare cause of massive, life-threatening gastrointestinal hemorrhage. Primary aortoenteric fistulas are typically caused by arteriosclerosis and occur in the elderly. Secondary aortoenteric fistulas (SAEFs) are uncommon complications of vascular surgical procedures. Presentations of SAEF can be straightforward but are notorious for elusive and temporally remote presentations.

The symptoms of SAEF are variable and depend on the site of the graft infection. Infected femoral components in a patient may present with a fever, local tenderness, and, occasionally, purulent drainage through a sinus tract in the thigh. Intravascular infections tend to be more nebulous; malaise, back pain, elevated white blood cell count (WBC), and abdominal complaints are the usual presentation. These features mimic more common disease entities, making diagnosis difficult.

Proving the existence of an SAEF radiographically can be difficult. In this article, paraprosthetic extravasation of enteric contrast, a rare and direct sign of SAEF, verified aorto-to-enteric communication on CT.

Case Report

A 72-year-old woman arrived at our emergency department with a fever, elevated WBC count, abdominal pain, and purulent groin drainage (Fig. 1). The patient had aortobifemoral prosthesis placement at an outside institution 6 weeks earlier. Because of abnormal renal function, a CT scan of the abdomen and pelvis was performed with enteric contrast only (meglumine diatrizoate [Gastrografin], Mallinckrodt).

CT revealed a ring of high-contrast material and air in the paraprosthetic space of the left iliac limb of the graft. The contrast and air tracked superiorly, to the level of the aortic portion of the graft and inferiorly into the groin. This represented leakage of enteric contrast from the bowel.

CT findings indicated an aortoenteric fistula and were confirmed at surgical exploration. Laparotomy revealed an infected aortobifemoral graft with a large intraperitoneal collection of purulent fluid just beyond the duodenum, anterior to the graft. The infected fluid collection extended into the left limb of the graft, with associated erosion into the adjacent sigmoid colon. The infected graft was removed and an aorto-to-popliteal bypass graft was inserted.

Culture of the wound drainage revealed mixed bowel flora. The patient was treated with IV antibiotics and experienced a complicated postoperative course. However, the patient fully recovered and returned home weeks later.

Discussion

Secondary aortoenteric fistulas are complications of aortic vascular procedures and were first described by Brock [1] in 1953. These fistulas represent an abnormal communication from the gastrointestinal tract to the suture line of a vascular graft and most commonly affect the proximal graft anastomosis. As enteric contents surround the anastomosis, infection often follows. Graft infection occurs in 1.3–6.0% of vascular procedures [2, 3], leading to breakdown of the anastomotic site and eventual hemorrhage. The reported incidence is approximately 0.6–1.5% of aortic bypass graft procedures [4]. Perigraft infections have mortality rates of 25–75% [5] and mimic other common emergency department diagnoses.

Subtle and confusing presentations can make diagnosis of deep perigraft infections difficult. The diagnosis of perigraft infection should be considered in all patients with a
history of graft placement and clinical features of abdominal pain and infection.

Because of its availability and speed, CT is the initial diagnostic technique of choice to evaluate SAEF [6]. Specific early imaging features have been described to aid diagnosis and include perigraft fluid, perigraft air, perigraft extravasation of IV contrast, focal bowel wall thickening, and pseudoaneurysm [6, 7]. Perigraft fluid or soft-tissue attenuation and perigraft air are the more commonly seen, although less specific, signs of SAEF. To our knowledge, this is the first report in the radiologic literature of CT revealing extravasation of enteric contrast material from the adjacent bowel [8]. This sign showed direct visualization of enteric contents encasing the vascular graft. Our real-time demonstration of active enteric extravasation around the graft is direct evidence of a fistulous connection between the bowel and vascular bed. In our case, the active SAEF was confirmed at surgery.

Most of the classic signs can represent normal postoperative findings, depending on the timing of the examination relative to surgery. For example, perigraft fluid and air are considered normal findings for weeks after surgery. Perigraft fluid has been reported for up to a year without being infected [9]. Although this sign was previously unreported in radiologic literature, para-prosthetic extravasation of enteric contrast is never a normal finding. In addition, many of the aforementioned signs can present with simple aortic graft infections and SAEF. Enteric extravasation into the fluid surrounding the aortic graft is rare but should be considered a highly specific sign of SAEF.

References


Fig. 1.—72-year-old woman with aortobifemoral prosthesis placement 8 weeks earlier presented with fever, elevated WBC count, abdominal pain, and purulent groin drainage. A, CT (with enteric contrast only) reveals ring of high-contrast material surrounding left iliac limb of graft. B, More caudal CT shows direct contact between sigmoid colon and left limb of graft. Communication between iliac limb of graft and sigmoid colon was confirmed at laparotomy. C, More proximal CT reveals large air–fluid collection anterior to graft, representing an abscess. Air and enteric contrast material are present around bifurcation of aortic component of graft.

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