Successful Embolization of the Peripheral Branches of the Superior Mesenteric Artery Performed Because of Tuberculosis-Associated Acute Bleeding in a Patient After a Renal Transplant

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Abstract

We report a renal transplant recipient infected with Mycobacterium tuberculosis who presented with severe intestinal bleeding. The bleeding was the result of an injured vessel of mesenteric artery distal branches diagnosed by traditional arteriography and computed tomography angiography. As the patient’s condition was serious, the only considered rescue therapy was endovascular treatment. The endovascular procedure was successful because the bleeding stopped. Embolization of a small intestinal artery may be a successful rescue treatment of intestinal bleeding in a patient after renal transplant.

Key words: Embolization of artery, Renal transplant, Mycobacterium tuberculosis, Intestinal bleeding, Endovascular treatment

Introduction

Gastrointestinal (GI) complications experienced by many transplant recipients are often serious and associated with high mortality. For example, GI bleeding, particularly from a gastroduodenal ulcer, is a common complication that carries with it a significant risk of mortality. Gastrointestinal adverse events from immunosuppressive drugs should be emphasized. Because of the steroid dosage reduction and the development of antacid drugs, such as proton pomp inhibitors and H2 receptor antagonists, the incidence of, and mortality from, GI complications has been decreasing. However, mortality owing to lower intestinal complications remains high. On the other hand, patients with chronic kidney disease and organ transplant recipients are known to be at increased risk of opportunistic infections as well as Mycobacterium tuberculosis infection. Mycobacterium tuberculosis may develop as a devastating condition in these patients. Abdominal tuberculosis may involve obstruction, perforation, and fistula, or diverticular formation. We report a renal transplant recipient infected with Mycobacterium tuberculosis who presented with intestinal bleeding.

Case Report

A 57-year-old woman with renal transplant failure after a kidney transplant (March 1, 2006) was admitted to the Department of Nephrology and Transplantation Medicine at Wroclaw Medical University because of fever of unknown origin, weakness, and the increased circumference of the abdomen. The patient complained about abdominal discomfort and flatulence. The results of urine, blood, and peritoneal fluid culture were repeatedly negative. Empirical antibiotic therapy included amoxicillin with clavulanic acid, ceftazidime, and piperacillin with tazobactam. Fever returned during 2 to 3 days of observation after temperature reduction. Ultrasound scan revealed fluid in the abdominal cavity located along liver, spleen, and between the bowel loops. The patient’s own kidneys were small, and renal transplant had deteriorated its...
function. Uterine hypertrophy with numerous myomas was detected. No other abnormalities were revealed.

Surgical consult recommended further observation. Abdominal and pelvic cavity computed tomography was ordered. An unclear image of an irregular structure in the appendage region (ovaries abscesses, pyosalpinx, tumor) was ascertained. Numerous focuses that might suggest inflammation or metastases in the omentum and in the subdiaphragmatic recesses were detected. Antibiotics were changed to imipenem with cilastatin sodium, vancomycin, and metronidazole without result.

A gynecologic consultation also certified abnormalities in pelvic cavity, and the patient was scheduled for an operation. During the surgical procedure, an omentectomy and drainage of the peritoneal cavity were performed. Numerous solid masses in liver, spleen, and peritoneum wall were discovered. Intumescence was found in the small and large bowel, as well as in the mesentery. On the second day after the operation, the patient returned to the Department of Nephrology and Transplantation Medicine to continue treatment.

Unexpectedly, after 3 weeks of hospitalization, the clinical condition exacerbated. The results of a culture for fluid in the peritoneal cavity were positive. The presence of *Mycobacterium tuberculosis* was certified. Solid masses were described by pathomorphologists as tuberculomas. Tuberculostatics were introduced. On the sixth day of tuberculostatic treatment, routine laboratory testing revealed a significant morphology drop (hemoglobin, 105 to 59 g/L; hematocrit, 33.7% to 17.5%; red blood cells, 3.87 to 2.8 × 10^{12}/L). The thrombocyte level was still low at 36 to 26 × 10^9/L. The transfused blood improved the laboratory test results.

A gastroscopy revealed biliary reflux and biliary gastritis but no signs of active bleeding. A subsequent colonoscopy revealed that the large intestine was full of blood. After rinsing the lumen of the bowel, no alteration in the mucous membrane of the large intestine was discovered and therefore, hemorrhage was attributed to the small bowel. Emergent computed tomography angiography was performed before the embolization procedure. The study demonstrated blood extravasation into the small bowel loop localized at the level of navel on the left side. The bleeding vessel was one of the superior mesenteric artery distal branches (Figure 1). During the embolization procedure, a leading catheter (Bist Brite Tip, Cordis Corporation, Bridgewater, NJ, USA) was introduced into the superior mesenteric...
artery. Next, a microcatheter Excelsior (Boston Scientific, Natick, MA, USA) was introduced into the injured vessel, and one of the intestine galleries was embolized using polyvinyl alcohol of a 300-micron gradation. The vessel was then supplied with histoacrylic glue. A follow-up arteriography showed no signs of contrast medium extravasation from the embolized vessel (Figure 2).

Discussion

A renal transplant recipient must receive immunosuppression. This factor predisposes him to a tuberculin infection because cellular immunity is decreased. Patients with end-stage renal disease and solid-organ transplant recipients are more exposed to extrapulmonary tuberculosis (TB) infection. It has been suggested that TB results from the fact that uremia modifies the behavior of TB and increases the risk of extrapulmonary dissemination and higher overall mortality. The most common locations of extrapulmonary TB are the peritoneum and the cervical lymph nodes, whereas the bone, subcutaneous tissue, brain, pericardium, the genitourinary system, and intestinal TB are rather rare. Therefore, the diagnosis of these rare sites of extrapulmonary TB infection is not so simple. In our patient with abdominal TB infection, intestinal bleeding was detected during hospitalization. Tuberculosis infection was finally confirmed by positive culture results of the peritoneal cavity fluid.

Although intestinal TB results in the increased capillary vascularity, small arteries develop obliterating endarteritis, causing unusual bleeding. Our patient had TB. Mycobacterium tuberculosis was found in the culture of the peritoneal cavity fluid. Solid masses were described by pathomorphologists as tuberculomas. Tuberculostatics were introduced as treatment. Our patient had been hemodialyzed for a long time and then treated with steroids. These factors made her blood vessels weak; that might have triggered massive bleeding. In this case, the origin of the intestinal bleeding was in the small bowel. Bleeding was the result of an injured vessel of the superior mesenteric artery distal branches. After the endovascular procedure, the bleeding stopped, and the patient—what was the most serious condition—underwent surgery. Owing to the seriousness of the patient’s condition, only endovascular treatment could be considered. The potential risk of ischemic intestinal complications associated with use of polyvinyl alcohol and/or histoacrylic glue during an embolization procedure caused by gastrointestinal bleeding is known. However, in this patient, we inserted the microcatheter distally into the last arterial vessel, proximally to the site of bleeding. Therefore, we could perform a superselective embolization. Our decision to use polyvinyl alcohol and histoacrylic glue seemed justified. We used polyvinyl alcohol (300- to 500-μm gradation) as the first and main embolizing agent. In some cases, polyvinyl alcohol shows the tendency to be partly flushed from the site of embolization with the increased risk of ischemic complications caused by unintentional embolization of neighboring arterial branches. Therefore, we used a small amount of histoacrylic glue so that the polyvinyl alcohol would not migrate. Follow-up angiography demonstrated no blood extravasation, and patency of adjacent arterial branches was preserved. There was neither early nor long-term vascular embolization-associated complications during follow-up.

In conclusion, GI complications affecting many transplant recipients are often serious leading to high mortality. Therefore, an immediate diagnosis and suitable treatment are indispensable to rescue a patient. Embolization of a small intestinal arterial branch may be a successful rescue treatment for intestinal bleeding.

References