Fatal Ischemic Colitis Secondary to Cytomegalovirus Vasculitis in a Renal Transplantation Patient

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A 56-year-old female developed fever and right upper quadrant pain one month after renal transplantation. Computed tomography and barium enema examination revealed irregular thickening and narrowing of the ascending colon extending to the hepatic flexure. Urgent right hemicolectomy was performed as patient’s condition deteriorated rapidly. Severe colitis with gangrenous change of ascending colon was evident during the operation. Histopathological examination for the resected specimen revealed cytomegalovirus infection with vasculitis and ischemic colitis. After the development of disseminated intravascular coagulopathy and internal bleeding, the patient unfortunately died four days after operation. Awareness of this rare cause of ischemic colitis is important because of frequent use of immunosuppressants in the organ transplant recipients.

Key words: Cytomegalovirus; Immunosuppression; Ischemic colitis; Transplantation

CASE REPORT

A 56-year-old female complained of severe abdominal pain and high fever for one week before the admission. She had chronic renal insufficiency for five years and had been undergoing regular hemodialysis in our hospital since then. One month before the admission, she underwent cadaveric renal transplantation in China. After transplantation, she had been treated regularly with CsA (175mg bid), Prednisone (20mg qd) and Cellcept (1.0gm bid) as the triple-drug immunosuppressive therapy. During admission, physical examination revealed a high temperature of 39°C. Palpation revealed a mass at the right upper quadrant with tenderness and rebounding pain. Laboratory data included a white blood cell count of 4,600/mm³ with segmented form of 92%. The renal function was normal. The c-reactive protein was elevated to 12,000 µg/L. Seral antibodies for CMV was positive for IgG and negative for IgM. HIV tests were negative.

Barium enema examination was arranged under the impression of abdominal mass, which showed irregular narrowing, rigidity of the ascending colon extending to the transverse colon through the hepatic
flexure (Fig. 1). The affected colon revealed areas of thumb-printing appearance at the mucosal surface. No fistula was identified throughout the course of colon. Subsequent CT scan of abdomen 5 days after admission demonstrated conspicuous thickening of the involved colon with milky stranding of the pericolic fat (Fig. 2). The right Gerota’s fascia was thickened and enhanced in the postcontrast scan. There was no intramural or intravascular gas shadow in the involved colon or in the portal system. No intravascular thrombus was seen neither. One day after CT examination, patient received operation because of progressive deterioration of the clinical condition with development of peritonitis, metabolic acidosis and respiratory failure. During the operation, marked thickening of colon with gangrenous change was found with prominent vascular engorgement extending from the ascending colon (20cm below ileocecal valve) to the proximal transverse colon. Minimal turbid ascitis with creeping mesenteric fat was present around the involved bowels. The colon was not perforated. Right hemicolectomy was performed under the impression of ischemic colitis, and totally 36 cm of involved colon was resected. Histopathologically, the resected bowel revealed hemorrhagic necrosis of mucosa and thrombus formation in the submucosal veins, with a variable degree of endothelial hyperplasia and prominent CMV inclusions (Fig. 3). Additionally, postoperative direct viral detection by a quantitative PCR method confirmed the presence of CMV in the patient’s serum. CMV vasculitis with resultant ischemic colitis was diagnosed pathologically. The patient began to receive ganciclovir therapy after the operation.

Unfortunately, disseminated intravascular coagulation occurred after operation. Internal bleeding and hypovolemic shock developed rapidly and progressed to multiple organ failures.

**DISCUSSION**

CMV infection is a well-known cause of disease occurring after organ transplantation in recent years due to the use of more potent immunosuppressive drug regimens [4]. CMV infection has variable manifestations clinically ranging from asymptomatic to organ function abnormalities [5], typically occurring 1 to 4 months after transplantation [6].

Although CMV involvement of the alimentary tract may vary in location, manifestation and extent, CMV colitis is the most common infection clinically. Patients with CMV colitis often manifest with a triad of diarrhea, fever and abdominal pain. Mucosal ulcerations and inflammation are commonly seen in most CMV colitis, which are responsible for the diarrhea and possible bloody stool clinically. Severe
CMV infection may result in transmural involvement and even bowel perforation. In severe CMV colitis, replication of the virus in the endothelial cells may lead to vasculitis and vascular thromboembolism, which in turn may lead to ischemic colitis.

The mechanism of the formation of vascular thromboembolism in CMV infection has been linked to the ability of the virus to modify the endothelial phenotype from anticoagulant into procoagulant, which accounts for its potential causative role in the pathogenesis of ischemic colitis [7].

It is generally agreed that the imaging findings of CMV colitis is nonspecific. In 24 cases of CMV colitis in the AIDS patients [8], pericolonic stranding and colonic wall thickening are the most frequent findings (appeared in 23 and 17 cases respectively). Deep mural ulceration was seen in 15 patients [8]. While short segmental CMV colitis may masquerade as colon tumor both radiologically and clinically [9], more extensive colitis has an even more list of differentiation, such as gastrointestinal graft-versus-host disease (GVHD), gastrointestinal complications in the neutropenic patient, ischemic colitis of other etiologies as well as inflammatory colitis of various pathogens. The definite diagnosis needs endoscopically obtained biopsies. In spite of its nonspecificity in the imaging study, the possibility of CMV infection should always be thought of in any patient with gastrointestinal disease in the immunosuppressive state.

In summary, the risk of CMV disease is relatively high in those receiving immunosuppressive drugs after organ transplantation. Unrecognized CMV colitis may cause serious complications, as our case showed. Early diagnosis of this disease in organ transplant recipient is important to start a prompt and often effective medical therapy. Although the imaging appearance of CMV colitis is not specific, it should always be suspected in the setting of a known immunosuppressed state clinically.

REFERENCES

Cytomegalovirus infection with ischemic colitis


巨細胞病毒感染引起致死之缺血性腸炎發生於一腎移植病患：病例報告

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一五十六歲女性在腎移植後一個月因發燒及上腹疼痛求診。鉬劑灌腸檢查顯示升結腸呈現不規則狹窄，電腦斷層攝影則顯示升結腸及肝鬚曲腸壁均增厚。患者因病情惡化接受右側結腸切除術，術中發現由升結腸至近端橫結腸處呈現嚴重發炎及壞死。病理報告顯示檢體呈巨細胞感染造成血管栓塞及缺血性壞死。術後患者病情持續惡化，四天後因廣泛性血管內凝血及內出血而死亡。因器官移植及免疫抑制剤之使用病例逐漸增多，對巨細胞感染造成之腸炎能夠早期診斷及治療，以防止病情惡化至缺血性腸炎，如本病例所示，是非常重要的。

關鍵詞：巨細胞病毒；免疫抑制；缺血性腸炎；腎移植