OCCULT PRESENTATIONS OF MESENTERIC INFARCT IN A KIDNEY TRANSPLANT RECIPIENT

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Abstract

Mesenteric infarct is a critical disease; it would be fatal without early diagnosis and proper treatment. The typical presentation of mesenteric infarct may become vague due to attenuation of inflammatory response in immunosuppressed, transplanted patients. We reported a mesenteric infarct, which presented as right flank pain and hypothermia, in a kidney transplant recipient. The initial diagnosis was misled as rejection of transplanted kidney by deterioration of kidney function. Profound shock developed after hemodialysis. A computed tomography scan of the abdomen revealed a hypoenhanced change of the small bowel wall at right abdomen.

Operative finding of explorative laparotomy revealed cyanotic change of terminal ileum about 70 cm in length. We suggest that hypothermia and even mild abdominal pain or flank pain should be carefully investigated in immunosuppressed, transplanted patients.

Key words: Transplant, Immunosuppression, Sepsis, Hypothermia, Bowel, Ischemia

Introduction

Mesenteric infarct occurred rarely in kidney transplant recipients.1-6 The typical presentation of mesenteric infarct may become vague due to attenuation of inflammatory response in immunosuppressed, transplanted patients. Moreover, the attenuation of inflammatory response may delay the diagnosis and proper treatment of sepsis. We reported an occult presentation of mesenteric infarct which occurred two years after kidney transplant. The initial diagnosis was misled as rejection of transplanted kidney. The diagnosis and management of mesenteric were delayed until the patient’s condition had deteriorated into a stage of profound shock.

Case report

A 47 year-old male patient had received a kidney transplant for end-stage diabetic nephropathy two years ago. Immunosuppressant regimens (Cyclosporin, mycophenate acid, and prednisolone) were taken after transplantation. The blood creatinine level was 1.9 mg/dL in last visit of our clinic. Two weeks prior to this admission, he went to a distant hospital to take care of his mother for 5 days. He forgot to take his immunosuppressants and suffered from general malaise, nausea, and vomiting at that time.
He resumed taking his immunosuppressants after he went home. Five days later, he felt right flank pain, and his urine output decreased. Two days later, he went to our hospital for further evaluation. Hypothermia with a temperature of 33.3°C was noted at admission. Laboratory studies revealed that the blood creatinine level was 8.6 mg/dL and the white blood cell (WBC) count was 9,690 /mm³ with normal differentiation. There was no peritoneal sign, and the right flank pain was relieved by morphine. The respiratory rate was between 15-20 breaths per minute. The heart rate was between 80-90 beats per minute. Under the impression of acute rejection of transplanted kidney, pulse therapy with methylprednisolone 500 mg was started.

On the next day of admission, hypothermia persisted with a temperature of 33°C. There was no symptom of chillness or cough, and his chest film was normal. Urine examination did not reveal any abnormalities. However, anuria developed, and the laboratory data revealed blood creatinine level of 10 mg/dL and hyperkalemia with blood potassium level of 6.4 mmol/L. Hemodialysis was arranged in that afternoon. However, his blood pressure decreased to 71/29 mmHg and his consciousness became drowsy one hour later after hemodialysis. His blood pressure increased to 81/36 mmHg after supplement of 400 mL normal saline, and hemodialysis was held. Because of stupor consciousness, dyspnea, and hypotension, he was transferred to intensive care unit for further management. He was intubated and shock management was continued with supplement of intravenous fluids and uses of dopamine and norepinephrine. Hypothermia was treated with active external warming and warm intravenous fluids. Laboratory studies revealed severe leukocytosis with WBC count of 52640 /mm³, severe metabolic acidosis with pH of 6.897, blood potassium level of 7.0 mEq/L, and blood lactate level was > 20 mmol/L (above the upper limit of our laboratory). Supplement of Sodium bicarbonate, use of insulin with glucose water, and continuous veno-venous hemofiltration were performed for severe acidosis and hyperkalemia. Empiric antibiotics with imipenam and fluconazole were administered.

Because of his previous complaint of right flank pain and signs of septic shock, intra-abdominal infection was suspected. Moreover, due to great elevation of blood lactate level without reduction after adequate resuscitation of shock, an ischemic lesion in abdomen was suspected. A computed tomography (CT) scan of the abdomen was arranged, and it revealed a hypo-enhanced change of the small bowel wall at right abdomen. (Fig. 1) Ischemic bowel disease at right abdomen was suspected and explorative laparotomy was performed. Operative finding revealed cyanotic change of terminal ileum about 70 cm in length with weak pulsation of mesenteric artery. Accumulation of turbid ascites was also noted. Segmental resection of the terminal ileum and an ileostomy were performed.

His condition improved after the operation. Inotropic agents and vasopressors were discontinued within 48 hours after operation. Immunosuppressant regimens (methylprednisolone, cyclosporine and mycophenate acid) were administered two days after operation. He received three times of hemodialysis, and his kidney function recovered gradually during the stay in intensive care unit. He was extubated two weeks after operation and transferred to general ward. He was

![Fig. 1. Computed tomography scan of the abdomen. Hypoenhancement of the small bowel wall (white arrow) was noted at right abdomen.](image-url)
discharged 40 days after admission. The blood creatinine level was 1.6 mg/dL on discharge day. Closure of ileocolostomy was performed 2 months later.

**Discussion**

In this case report, the patient suffered mesenteric infarct two years after kidney transplant. Typical abdominal pain of mesenteric infarct is severe and described to be more impressive than the physical findings.\(^7\)\(^-\)\(^9\) The presentation of mesenteric infarct in our patient was occult due to attenuation of systemic inflammatory response by immunosuppressants. It presented as right flank pain without peritoneal signs. Heart rate, respiratory rate, and the initial count and differentiation of white blood cell were all in normal range. The only presentation of systemic inflammatory response syndrome was hypothermia. We suspected that the mesenteric infarct might occur and present as right flank pain two days ago before this admission. Due to the occult presentation, the operation was performed two days later after admission.

Two reports had mentioned that abdominal pathologies may present differently in immunosuppressed, transplanted patients, and it would cause diagnostic delay or wrong treatment.\(^10\)\(^,\)\(^11\) We suggested that decreased renal function might be related to sepsis after mesenteric infarct. The diagnosis of rejection of transplanted kidney might be misled by the occult presentation of sepsis. During hemodialysis, his condition became unstable and worse, and many signs of severe sepsis were disclosed as change consciousness, hypotension, and dyspnea. After segmental resection of the ischemic terminal ileum, his condition improved and septic shock resolved within 48 hours. The elevation of WBC count might be resulted from the use of pulse therapy with methylprednisolone 500 mg. Moreover, the great elevation of blood lactate level was one of the reasons to suggest ischemic bowel in this patient. In our experience, if the elevation of blood lactate level was not correlated with the severity of general hypoperfusion, there might be a regional ischemic lesion or impaired liver function. Due to the initial complaint of right flank pain, ischemic bowel was suspected. This is why we arrange a CT scan of abdomen to disclose the mesenteric infarct.

Hypothermia was the only presentation of systemic inflammatory response syndrome in this patient. Although the mechanism of hypothermia is not well known, hypothermic patients with septic shock have a significantly higher mortality and higher incidence of organ dysfunction than febrile septic shock patient.\(^12\) The hypothermia in this patient was not aggressively treated in the general ward. In the intensive care unit, we had managed the hypothermia with active external warming and warm intravenous fluids. We believe that both humoral and cellular immunity are adversely influenced with hypothermia.\(^13\) Torossian et al found that hypothermia may interfere cytokine release, which was ameliorated by normothermia.\(^14\) Moreover, Xiao et al had revealed that correction of perioperative hypothermia improves survival after sepsis by appropriately modulating the early inflammatory response.\(^15\)

Mesenteric infarct is a critical disease; it would be fatal without early diagnosis and proper treatment. However, the presentation of mesenteric infarct was occult in immunosuppressed, transplanted patient. We suggest that hypothermia and even mild abdominal pain or flank pain should be carefully investigated in these patients. The elevation of blood lactate level should be differentiated between the diagnosis of general hypoperfusion and regional infarct. Adequate management of hypothermia may modulate inflammatory response and improve outcome.

**References**

腸系膜缺血隱伏表現在腎移植接受者

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摘要

腸系膜缺血是嚴重的疾病，若未能早期診斷及適當治療可以致命。使用免疫抑制藥物的移植病人，因免疫力被抑制，導致腸系膜缺血時不會出現典型表現。本文報告一個接受腎移植的病人罹患腸系膜缺血，初始症狀只有右腰痛及低體溫。因腎功能變差，初始診斷是移植腎發生排斥反應。病人在接受洗腎後併發嚴重休克。腹部電腦斷層發現右腹小腸壁有缺血現象。緊急剖腹手術發現約70公分的末端迴腸有缺血現象。我們建議免疫抑制的移植病人若有低體溫及腹痛應謹慎評估是否有腸系膜缺血或其他腹部急症。

關鍵詞：移植，免疫抑制，移植，敗血症，低體溫，腸，缺血

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