

Case report

The value of computed tomography in the diagnosis of acute necrotising pancreatitis in a renal transplant patient

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Background

The incidence of acute pancreatitis after renal transplantation ranges around 1%, and the mortality rate is nearly 65%. Dynamic computed tomography (CT) scan and amylase levels are valuable in the diagnosis of this rare complication.

Case outline

A 29-year-old man was hospitalised with cytomegalovirus (CMV) pancreatitis after renal transplantation. An initial CT scan showed an enlarged pancreas with hypodense, heterogeneous consistency and with peripancreatic, perihepatic, mesenteric and pelvic fluid collections. After initial conservative management, follow-up CT revealed pancreatic necrosis and abscess formation. The patient underwent necrosectomy

and repeated drainage of abscess facilitated by a Bogota bag, but he died 60 days after admission and five surgical procedures.

Discussion

CMV pancreatitis after renal transplantation is rare and frequently fatal. In the presence of an acute abdomen after renal transplantation, the diagnosis of pancreatitis should be considered. Dynamic CT scan and measurement of amylase levels are recommended.

Keywords

acute pancreatitis, renal transplantation, CT scan, CMV infection

Introduction

Acute pancreatitis is a rare and often fatal complication of renal transplantation, and the diagnosis can be elusive. The aetiology of acute pancreatitis in transplant patients is complex, and underlying causes must be carefully sought. We present a patient who developed acute necrotising pancreatitis after a living-related renal transplant and discuss the importance of computed tomography (CT) and early surgical intervention in this condition.

Case report

A 29-year-old man was referred for assessment and management of nausea, vomiting and abdominal pain 1 year after living-related renal transplantation. His symptoms included diarrhoea, fever and abdominal pain for

the previous 7 days. His immunosuppressive medication was mycophenolate mofetil 1000 mg twice daily, cyclosporin 250 mg twice daily and prednisolone 10 mg once daily. On physical examination respiratory sounds were decreased at the basal segments of the lungs, and abdominal rebound tenderness was elicited.

Biochemical analysis revealed an abnormal blood glucose level of 8.5 mmol/L (N: 4.4–6 mmol/L), urea 12 mmol/L (N: 1.66–8.32 mmol/L), uric acid 0.7 mmol/L (N: 0.2–0.4 mmol/L), potassium 5.51 mmol/L (N: 3.3–5.4 mmol/L), calcium 1.38 mmol/L (N: 2.15–2.55 mmol/L), AST 73 IU/L (N: 0–38 IU/L), ALT 73 IU/L (N: 0–41 IU/L), LDH 308 IU/L (N: 240–480 IU/L) and amylase 178 IU/L (N: 28–100 IU/L). White blood cell count was also raised ($17 \times 10^9/L$). Early cytomegalovirus (CMV) antigen was also positive in the serum. Abdominal ultrasonography (US) detected enlargement of the pancreas with peripancreatic and

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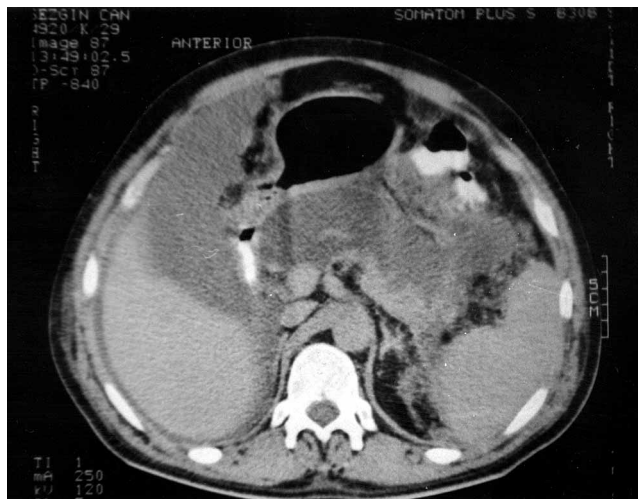


Figure 1. CT shows diffuse necrosis of pancreas and omentum plus a perihepatic fluid collection.

perihepatic fluid collections and a 27-mm cyst in the head of pancreas. The rest of the gland was heterogeneous but highly hypo-echoic. There was no evidence of gallstone disease. CT scan showed bilateral pleural effusions plus atelectasis in the posterior segment of the lower lobe of the right lung. The native kidneys were small and showed thin parenchyma. The transplanted kidney, in the right pelvic region, appeared normal in size (cranicaudal diameter 12 cm) and parenchymal thickness (2.5 cm). The pancreas was enlarged, hypodense (13 HU) and with heterogeneous internal density. Peripancreatic, perihepatic, mesenteric and pelvic fluid collections were detected with an internal density of 17 HU (Figures 1–3).

The patient was treated conservatively for 20 days, but his medical condition did not improve. He developed an acute abdomen, and US showed an abdominal fluid collection; US-guided paracentesis showed dark red prune juice. The acute phase reactants C-reactive protein and LDH levels increased, and microbiology of the peritoneal fluid cultures showed mixed infection with *Escherichia coli*, *Bacteroides* sp. and *Staphylococcus aureus*. Gas bubbles were seen in the CT scan, confirming the diagnosis of infected pancreatic necrosis, which led to laparotomy. Necrosectomy and a drainage procedure were performed. Although extensive necrosectomy and debridement were performed there were small areas of necrosis that might be the source of ongoing or recurrent sepsis. Therefore repeated operations were planned to remove the remaining necrotic material and the abdo-



Figure 2. CT shows cysts in the head of the pancreas, extensive pancreatic necrosis and diffuse fluid collections.

men was closed with a sterile silicon saline bag (Bogota bag) [1]. Every 3–4 days thereafter necrosectomy, debridement and peritoneal lavage were performed. On postoperative day 25 methicillin-resistant *Staphylococcus aureus* (MRSA) infection with multiple organ failure developed, and the patient died 60 days after admission to hospital.

Discussion

Acute pancreatitis is fortunately rare in renal transplant recipients, and it is associated with a poor prognosis. Fernandez and colleagues [2] reported a 2.3% incidence of acute pancreatitis in 3253 renal transplant patients and a mortality rate of 61%. It is generally believed that immunosuppressive drugs are the leading cause of acute pancreatitis in these patients [3–7]. CMV infection is a common complication of immunosuppressive treatment [8], it affects the salivary glands and the pancreas, and can lead to acute pancreatitis. Our patient received a triple immunosuppressive regime composed of cyclosporine, prednisolone and mycophenolate. Early CMV antigen was detected in his serum, supporting the postulated viral aetiology of his pancreatitis.

Acute pancreatitis in renal transplant patients tends to have an insidious onset, similar to the present case. Impaired macrophage and neutrophil chemotactic and phagocytic function in transplant patients may result in poor clearing of injured peripancreatic tissue. This defect may allow greater progression of the disease with

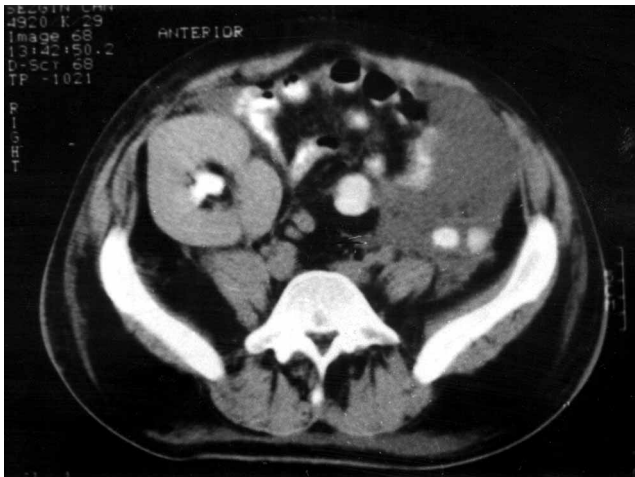


Figure 3. CT shows ascites plus the renal graft in the right iliac fossa.

extensive necrosis and infection, as seen in our patient. Douglas and co-workers [9] assessed the severity of pancreatitis in transplant recipients based on dynamic CT scanning. Minimal oedematous change limited to the pancreas was defined as group 1, and these patients had a good response to standard medical treatment. Patients who had a limited pancreatic abscess or cysts (group 2) were treated with traditional operative methods of drainage. Patients in group 3 had findings of severe pancreatitis with necrosis of the gland; 55% of these patients were treated medically before undergoing an operative procedure but none of them survived. The other 45% underwent early surgical treatment, depending on CT findings, and all of them survived. According to the classification of Douglas, our patient would be placed in group 3.

London *et al.* [10] declared that dynamic CT scanning is both sensitive and specific in evaluating the extent of pancreatitis and determining its severity. CT scanning can also help to detect complications and to predict the

need for early surgical intervention. With this case we wish to highlight the high mortality rate of acute pancreatitis in renal transplant recipients and stress the importance of early CT scanning and an early surgical procedure.

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