J Ped Nephrol
Journal of Pediatric Nephrology
2024. Volume 12

Case Report

Severe Pancreatitis After Renal Transplantation Due to Disseminated Cytomegalovirus Infection: A Case Report

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Citation Hoseiny Nejad N, Rahimzadeh N, Eshghi A. Severe Pancreatitis After Renal Transplantation Due to Disseminated Cytomegalovirus Infection: A Case Report. Journal of Pediatric Nephrology. 2024; 12:E48224. http://dx.doi.org/10.22037/jpn.v12i1.48224

http://dx.doi.org/10.22037/jpn.v12i1.48224

Article info:
Received: 08 Jan 2024
Accepted: 09 Mar 2024
Publish: 21 Sep 2025

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ABSTRACT

Background and Aim: Cytomegalovirus (CMV) infection is considered one of the most common opportunistic infections and also a common cause of morbidity and mortality among patients receiving renal transplantation. Pancreatitis is a rare complication of CMV infection in renal transplant recipients, which can lead to death. Here,

Case Presentation: we presented a 10-year-old boy who underwent a nonrelative living donor renal transplantation and was admitted due to early graft dysfunction two months after transplantation. Diagnostic tests for modalities showed CMV infection. The patient was treated with ganciclovir; however, he developed seizures and acute abdominal pain one week later. The brain MRI revealed increased signal intensity in the cortex and subcortex of the parieto-occipital lobe. Serum laboratory tests showed elevated levels of amylase and lipase. The patient was treated for CMV infection and pancreatitis.

Conclusion: Finally, the patient died due to multi-organ failure caused by disseminated CMV infection two weeks after admission. These findings suggest that disseminated CMV infection and pancreatitis may occur after renal transplantation, with a high mortality rate.

Keywords: Renal transplantation, Cytomegalovirus, Severe pancreatitis

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Introduction

Acute pancreatitis is a condition that occurs as a result of inflammation in the pancreas. It is mainly induced by gallstones and alcohol abuse. Acute pancreatitis can be associated with multiple problems, such as low blood pressure, pancreaticobiliary maljunction, and hyperlipidemia [1]. The etiology of acute pancreatitis in patients is variable; hence, all underlying factors should be considered for rapid diagnosis and treatment. It may also be caused by several infectious microorganisms, including viruses, bacteria, fungi, and parasites [2]. Acute pancreatitis can rarely occur in patients with renal transplantation [3]; however, the exact mechanism remains unknown.

Cytomegalovirus (CMV) is a DNA virus and one of the most common causes of infection in immunocompromised patients, including those with acquired immunodeficiency syndrome (AIDS), autoimmune diseases, and organ transplantation [1]. It may also be infrequently associated with acute pancreatitis in patients who have received organ transplants [4, 5]. Because patients with renal transplantation are on immunosuppressive drugs, there may be an increased risk of pancreatitis caused by CMV.

Case Presentation

Here, we presented a 10-year-old boy who underwent nonrelative living donor renal transplantation and was admitted due to early graft dysfunction two months after transplantation.

Diagnostic tests showed CMV infection. The patient was treated with ganciclovir; however, he developed seizures and acute abdominal pain one week later. Radiologic studies (Figures 1 and 2) showed dilated loops on the supine abdominal X-ray. The brain MRI revealed increased signal intensity in the cortex and subcortex of the parieto-occipital lobe. Serum laboratory tests showed elevated levels of amylase and lipase (Tables 1 and 2). He was treated for both CMV infection and pancreatitis. Finally, the patient died due to multi-organ failure caused by disseminated CMV infection two weeks after admission.

These findings suggest that disseminated CMV infection and pancreatitis may occur after renal transplantation, with a high mortality rate. This is a rare case of renal transplantation complicated by pancreatitis caused by CMV.

Discussion

Acute pancreatitis is a common digestive disease in which the pancreas is inflamed. The mortality and morbidity associated with this condition can vary and depend on the severity of the disease and the timing of evaluation [6]. Therefore, early diagnosis and appropriate treatments are essential. It is clinically associated with several features, such as acute upper abdominal pain, which is often accompanied by nausea and vomiting in most cases. The primary causes of acute pancreatitis include biliary lithiasis, gallstone disease, and excessive alcohol intake; however, several other factors, such as infections, drug use, and surgery, can also be associated with this disease [1, 7].

CMV is a common cause of infection that targets multiple organs and causes various diseases in immunocompromised patients. CMV infection can also be rarely associated with acute pancreatitis. Salazar-Huayna et al. [6] reported two cases of pancreatitis secondary to CMV infections. Both cases were treated with ganciclovir and showed clinical improvement. In a previous study, Wolf et al. [8] reported two cases of CMV pancreatitis in HIV seropositive patients. However, both patients showed no response to treatments and eventually died. Interestingly, these cases did not present clinical symptoms of pancreatitis; however, they had high CMV titers and high amylase and lipase levels [8]. Similarly, our case did not show clinical characteristics of pancreatitis, but he had high CMV titers and high amylase and lipase levels. Another previous study reported a female case of pancreatitis caused by CMV, which clinically presented with mild pleural effusions and elevated levels of amylase and lipase [9]. She responded satisfactorily to 5-fluorouracil and fully recovered after two weeks of hospitalization [9]. Recent studies have reported CMV pancreatitis in different patients with systemic lupus erythematosus and patients who receive immunosuppressive drugs [1, 10]. These data indicate an association between CMV and acute pancreatitis in immunocompromised patients; however, acute pancreatitis induced by CMV may present with diverse clinical symptoms. Therefore, early diagnosis and treatment of the disease are essential.

CMV is also a common cause of infection in kidney transplant patients; however, it may have diverse clinical symptoms. It has been suggested that infection may occur in about 70–80% of seronegative patients after receiving renal transplantation from a positive donor [11]. Nevertheless, there have been a few case reports of acute pancreatitis in organ transplant recipients, primarily involving liver and pancreatic allografts. Acute pancreati-

Table 1. Biochemical test results on different days

Lab Tests	On Admission	2nd Day	4rth Day	6th Day	8th Day
Cr (mg/dL)	1.3	1.4	1.7	3.2	4.5
Na (mEq/L/l)	145	140	138	134	
K (mmol/L)	5	4.9	3.4	5.5	
Ca (mg/dL)	6.5	6.6	6	7.3	
P (mg/dL)	4.5	5	3.7	4.7	
Mg (mg/dL)	1.8	1.5	1.1	2.5	
ALP (IU/L)	116				
PT-PTT (seconds)	NL			19.5,30 INR=1.9	
SGOT(U/L)	38	1.2-0.5		NL	
SGPT (U/L)	27				
Hb (g/dL)	8	6.2	8.5	13	
MCV (fL)	83	80	56000	56000	
WBC (cells/µL)	13600	18500			
PMN	83%	45000			
PLT (cells/µL)	84000				

Table 2. Biochemical test results over several days

Variables	On Admission	2nd Day	4th Day	6th Day
Blood gas	PH=7.43 PCO_2=23.7 mmHg HCO_3=15.3 mE/l PO_2=105 mmHg	7.3 18.4 9.1	7.37 31.8 17.3 81.6	7.26 39.5 17.3 66.1
U/A	S=1011 PH=5 Protein=1+ Glu=1+ RBC=10-12 (per HFP)			SG:1020 Pro=2+ RBC=many (per HFP)
CRP (mg/dL) ESR (mm/h)	<6 50		96	75
TG (mg/dL) HDL (mg/dL)			854 99	
Amylase (U/L) Lipase (U/L)			628 372	375
Ascitic tap		WBC=2100 (cells/µL) PMN=96% GLU=207 (mg/dL) PRO=2 (g/dl) LDH=1148 (U/L)		
tProtein (g/dL) Alb (g/dL)		5.5 2.9		6.7 3.5
B/C			Negative	
U/C			Negative	
FDP (µg/mL /mL) D-dimer (µg/dL) , Fibrinogen (g/l)		1.8 1.8 4.2		

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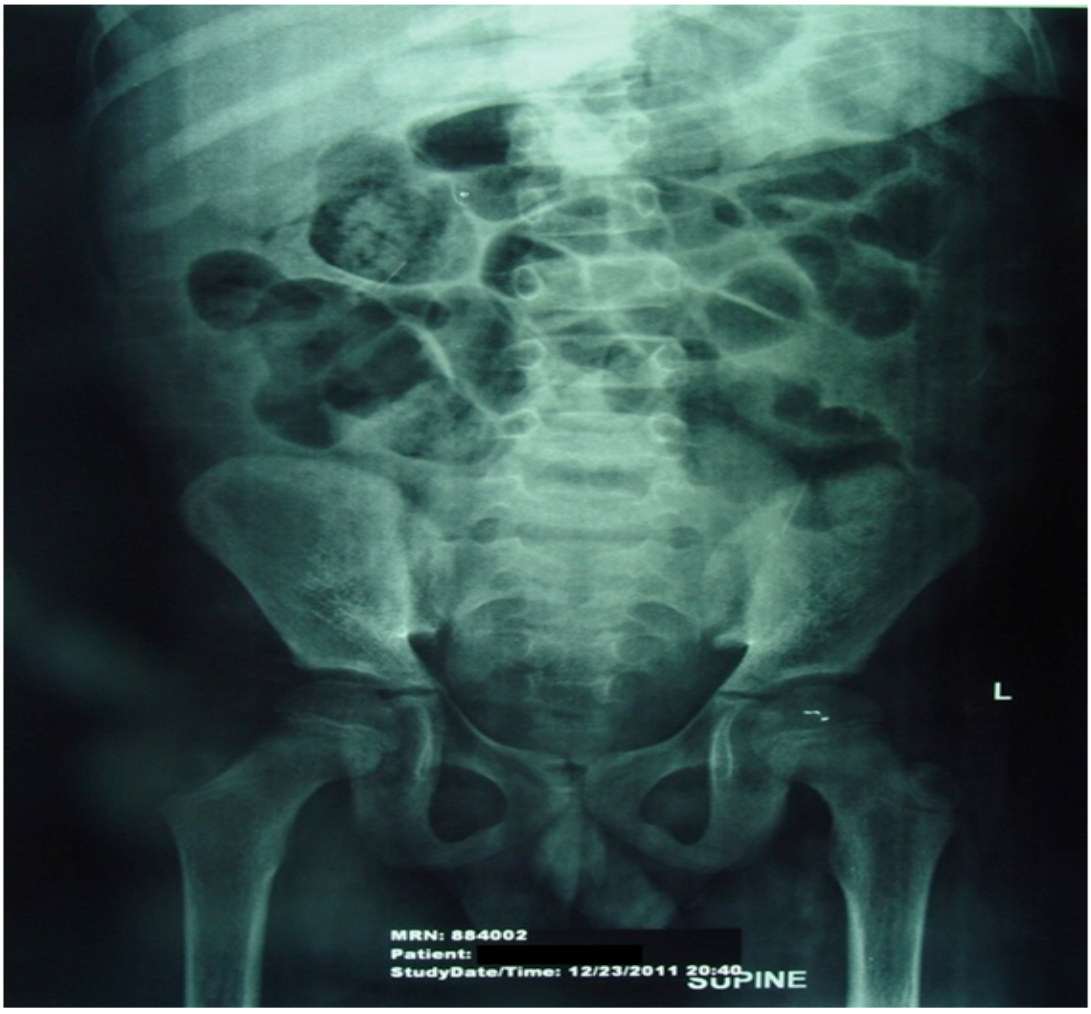

Figure 1. Chest X-ray of the patient

tis is a rare complication in renal transplant patients with a high risk of mortality. The prevalence of acute pancreatitis following kidney transplantation varies from 1 to 5% [11]. Here, we presented a 10-year-old boy who underwent renal transplantation and developed acute pancreatitis caused by CMV. Our case had multiple risk factors for acute pancreatitis, including a history of CMV infection and unrelated renal transplantation. Similarly, Kamalkumar et al. [11] reported a renal transplant recipient who developed acute pancreatitis associated with CMV.

Immunosuppressive drugs are a leading acute pancreatitis in these patients [12]. Severe pancreatitis is rare in renal transplantation and may lead to death because of multi-organ failure [3]. Our patient was treated with a triple immunosuppressive regimen, including prednisolone, cyclosporine, and Cellcept. A high quantitative CMV viral load was detected in his serum, indicating the etiological role of CMV in the acute pancreatitis observed in our case. Acute pancreatitis in a renal transplant patient tends to have an insidious onset, similar to that of our patient. CT scanning is sensitive and specific in detecting complications and also in predicting the need for early surgical intervention. However, CT scanning was not performed for our patient because the diagnosis of acute pancreatitis was not made initially. However, generalized abdominal pain, hyperglycemia, low serum calcium levels, and a drop in hemoglobin should have raised adequate concern.

Conclusion

Although severe pancreatitis may be rare in renal transplant recipients, it is a serious complication with multiple risk factors. CMV can be considered one of the main causes of infection in these cases. CMV pancreatitis can present with multiple clinical symptoms, particularly elevated levels of amylase and lipase, as well as high CMV serum titers. Therefore, early diagnosis and treat-

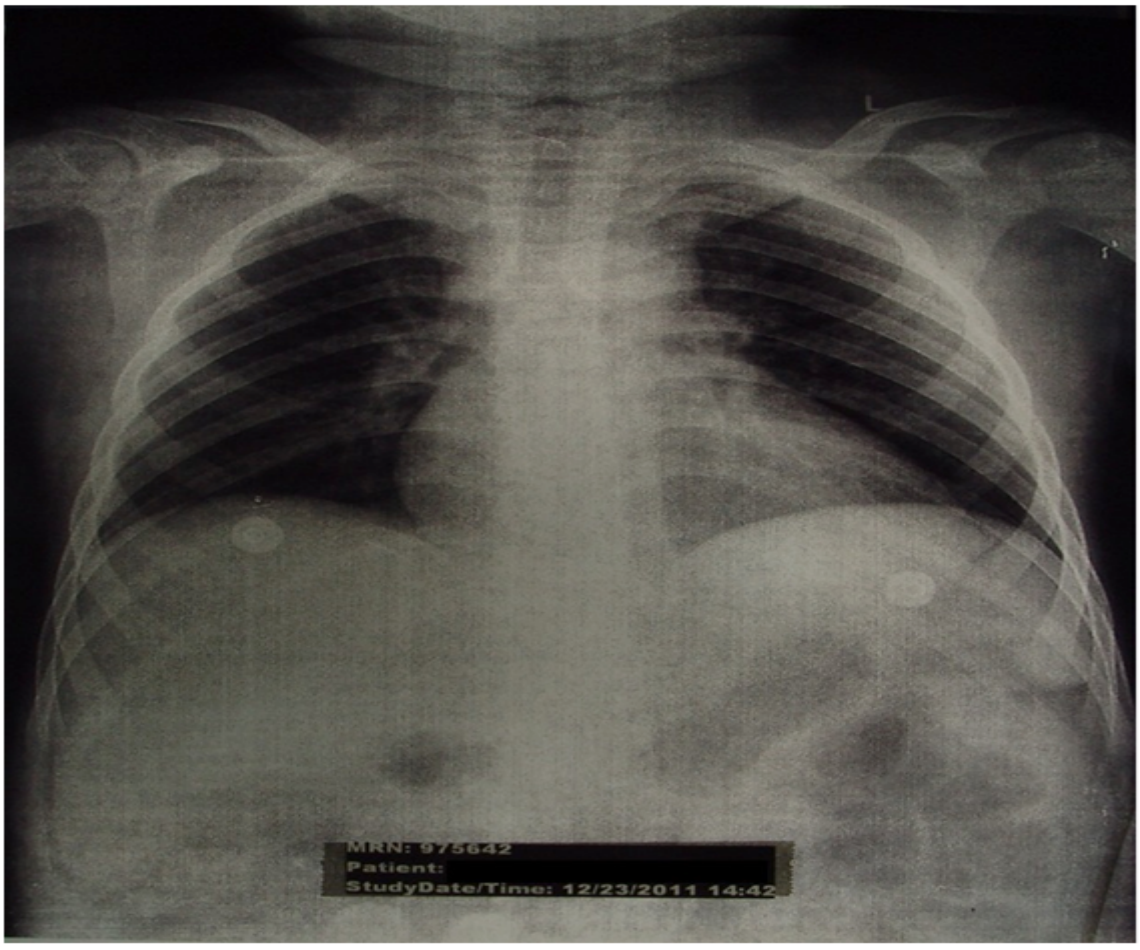

Figure 2. Supine abdominal X-ray showing a dilated loop

ment of CMV pancreatitis in renal transplant recipients are necessary to prevent mortality in these cases.

Ethical Considerations

Compliance with ethical guidelines

There were no ethical considerations to be considered in this research.

Funding

This research did not receive any grant from funding agencies in the public, commercial, or non-profit sectors.

Authors' contributions

All authors contributed equally to the conception and design of the study, data collection and analysis, interpretation of the results, and drafting of the manuscript. Each author approved the final version of the manuscript for submission.

Conflict of interest

The authors declared no conflict of interest.

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