Case Report

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Cytomegalovirus Colitis in a 10 Year-Old Girl after Kidney Transplantation

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Abstract

Background: Cytomegalovirus is an important infection in kidney Transplantation. Isolation of the CMV virus or detection of its proteins or nucleic acid in any body fluid or tissue specimen is defined as "CMV infection".

Case Presentation: A 10-year-old girl was admitted frequently for vomiting and colicky watery diarrhea starting one month after renal transplantation from a non-relative living donor. Cr, BUN, serum electrolytes and also liver function tests were normal. Anti CMV IgM titer was negative before and after transplantation. On colonoscopy large aphthous like lesions were detected in the colon. CMV PCR of the lesion was strongly positive (>2000 copies/ml). The patient received Ganciclovir.

Conclusion: Usually CMV infected patients present with renal dysfunction after renal transplantation but other organ involvements must not be ignored. We report a patient presenting only with intestinal signs and symptoms of CMV infection.

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Key Words: Cytomegalovirus; CMV; Renal transplantation; Colitis

Introduction

Cytomegalovirus (CMV) infection is one of the most important causes of morbidity and mortality in kidney transplant recipients. It is diagnosed by a combination of clinical symptoms of the gastrointestinal tract, finding of microscopic mucosal lesions on endoscopy and demonstrating CMV infection. The endoscopic lesions range from exudates, patchy erythema, mucosal erosions and edema, to deep ulcers and pseudo tumors[1].

Isolation of the CMV virus or detection of its proteins or nucleic acid in body fluids or tissue specimens is defined as "CMV infection".

CMV infects epithelial and mesenchymal cells, destructs the cells and causes ulcers on the epithelial layers of different organs including intestine and colon[2]. Reported cases are referred mainly to adults with predisposing conditions like diabetes mellitus and there are rarely reports on CMV colitis in children after kidney transplantation[3]. We report a 10-year-old girl who experienced CMV colitis after receiving a kidney from a CMV negative live donor to alert kidney transplant teams to have this infection in mind, despite being rare, although important.

Case Presentation

One month after renal transplantation from a non-relative living donor, at age of 10 years, the patient was hospitalized due to vomiting and colicky watery

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diarrhea. She was receiving Cyclosporine (5mg/kg/day), Prednisolone (0.7mg/kg/day) and mycophenolate mofetil (MMF) (1200mg/m^2/day) as immunosuppressive therapies. Diarrhea was treated conservatively.

Three months later, she was admitted again for vomiting, abdominal pain, watery-non bloody diarrhea and low grade fever.

Physical examination showed fever (oral temperature 38.5°c), blood pressure 100/75mmHg, pulse rate 85/min. Abdominal examination revealed distension, and mild tenderness without rebound accompanying increased bowel sounds. A low grade II/VI systolic murmur was detected in heart auscultation. No other remarkable signs were found.

Initial laboratory investigations showed: Hemoglobin 11.5 g/dl, WBC 27200/mm^3 (neutrophils: 92%), platelets 325000/mm^3). Serum creatinine, Blood Urea Nitrogen (BUN) and liver function tests were normal (Cr 0.7 mg/dl, BUN 17mg/dl, AST 32IU/l, ALT 52IU/l, Total Bilirubin 1.8 mg/dl).

Serum electrolytes also were normal. Anti CMV IgG titer before and after transplantation was (7 IU/ml and 15 IU/ml respectively). Anti CMV IgM titer was negative before transplantation and did not change significantly after transplantation. Both in recipient and donor, urine and serum CMV PCR testing were negative after transplantation. Also tuberculin test remained negative before and after receiving the graft. We did not administer Ganciclovir as prophylaxis.

Stool examinations (3 times) revealed many white blood cells (100% neutrophils) and no red blood cells. Stool cultures in specific media were negative for Shigella, Salmonella and Campylobacter jejuni. Also acid fast staining did not reveal Cryptosporidium and Isospora. No pathogenic bacterium or fungus was found by blood culture.

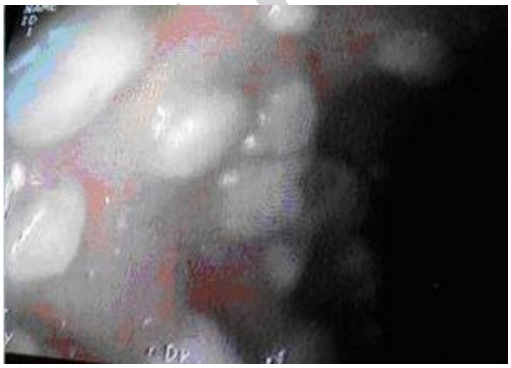

Fig. 1: Endoscopic appearance of aphthous like lesions of colon in the patient

Abdominal CT scan showed only intestinal wall thickening. On colonoscopy large aphthous like lesions were detected in all segments of the colon (Fig. 1).

Histopathologic examination showed acute inflammation and inclusion bodies (Fig. 2). PCR evaluation for tuberculosis and CMV were done on samples derived from colon lesions. CMV PCR of the colon lesions was strongly positive (>2000 copies/ml). We started treatment with Ganciclovir (5mg/kg/ twice daily intravenously). After 3 weeks, Gancyclovir was changed to Valganciclovir (15 mg/kg/day, po) and continued for another 3 months.

Also, Azathioprine (2.5mg/kg/day) was substituted for MMF. Three days after starting treatment with IV Ganciclovir signs and symptoms relatively subsided. Renal function tests remained stable throughout the treatment course (serum creatinine 0.6mg/dl).

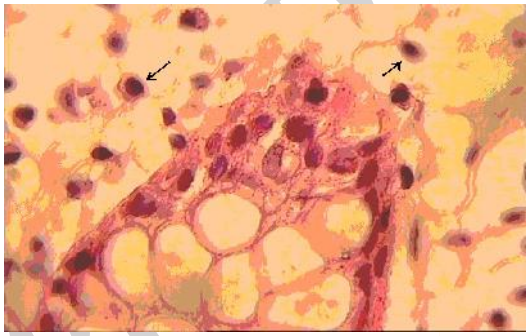

Fig. 2: Histopathologic evaluation of aphthous lesions of colon demonstrated acute inflammation and characteristic cytomegalovirus (CMV) inclusion bodies

Discussion

In reported case it was seen that a kidney transplanted patient presents only with intestinal signs and symptoms of CMV infection. It is more fashionable that CMV infected patients present with renal dysfunction in addition to other organ involvement after renal transplantation. Our case is the first pediatric report – as far as we know – of CMV colitis in renal transplantation. In kidney transplant recipients especially those who are on therapy with immunosuppressive drugs like MMF, CMV infection must be considered if gastro intestinal symptoms are present. We should consider Polymerase Chain Reaction (PCR) examination of colon specimens in addition to serologic tests to diagnose CMV gastrointestinal disease in suspicious cases.

In CMV infected graft recipients, anorexia, abdominal pain, watery non-bloody diarrhea and

vomiting may progress to GI bleeding and pseudo-obstruction in severe cases[3,4].

CMV manifests during the first 2-5 months after solid organ transplantation, when the immuno-suppressive drugs are given in the maximum doses[5]. Knowledge about CMV gastrointestinal disease in the pediatric kidney transplant patients is limited[5]. In our patient antibodies of CMV has been in normal limits. This may be due to decreased antibody production in severe acute CMV infection or decreased immune response by MMF. CMV gastrointestinal disease is not uncommon after intestinal transplantation in children. Bueno et al reported sixteen episodes of CMV disease without serious morbidity in 10 of 41 children undergoing intestinal transplantation[6]. Lortholary et al reported a case of primary CMV infection associated with the onset of ulcerative colitis. The patient's main symptoms were bloody diarrhea and fever[7].

In a survey, reported by Blanche et al, the most common viral infection in organ transplant recipients older than 5 years was CMV infection[7]. More than 80% of sources is from a seropositive donor[8]. However, prescribing MMF, high doses of Methyprednisolone (solumedrol) and also Tacrolimus are associated with increased risk of CMV infection[6,8].

Having considered all facts mentioned above, we could not identify any specific source for CMV infection in our patient.

Severe clinical infections are seen in patients receiving MMF, prednisolone and cyclosporine[9]. In one study, patients receiving MMF had higher risk for CMV infection compared to patients receiving Azathioprine and placebo[10]. In recent years, CMV infection in hospitalized patients, despite receiving prophylaxis, the incidence of CMV infection is increasing. This problem may be due to immunosuppressive drugs or insufficient effect of prophylaxis[5].

Prophylaxis is very important. If not received prophylaxis, the patient must be monitored closely for symptoms and signs to reduce morbidity and mortality.

Conclusion

Although CMV infected patients usually present with renal dysfunction after renal transplantation, other organ involvements must not be ignored, as here reported patient presented only intestinal signs and symptoms of CMV infection.

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