

Severe gastroenteritis as presentation of a primary cytomegalovirus infection in an immunocompetent woman

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Abstract

In immunocompetent hosts, symptomatic cytomegalovirus (CMV) infection occurs in around 10% and has traditionally been considered to have a benign, self-limiting course. Active CMV infection in immunocompetent subjects is very rare. However, manifestations of CMV infection in immunocompromised hosts have been extensively reported. We present a case of a 58-year-old immunocompetent woman with a primary cytomegalovirus infection which presented as a severe gastroenteritis and hepatitis.

Introduction

Cytomegalovirus (CMV) is a double-stranded DNA virus belonging to the herpes virus family. CMV infections occurs frequently in the immunocompetent and immunosuppressed; seroprevalence worldwide ranges from 60-100%.¹ CMV can cause severe disease in immunocompromised patients, either via reactivation of latent CMV infection or via acquisition of primary CMV infection.

In immunocompetent hosts, symptomatic CMV infection occurs in around 10% and has traditionally been considered to have a benign, self-limiting course. Active infection in immunocompetent subjects is apparently rare. But when it does occur, it results either from endogenous reactivation or from exogenous reinfection with another virus strain.² Clinically, the disease typically runs an undifferentiated viral syndrome, or is manifested by a mononucleosis-like syndrome characterized by malaise, protracted fever, mild liver-function abnormalities, and atypical lymphocytosis, although hepatitis, meningoencephalitis, and myocarditis have been described.³

Several reports suggest that CMV is a potential pathogen in the gastrointestinal (GI) tract in immunocompetent hosts. The most common sites of GI involvement are the colon, followed by the upper GI tract; the least common site is the small intestine.^{4,5} We present an immunocompetent patient in whom a primary

CMV infection presented as a gastroenteritis and hepatitis.

Case Report

A 58-year-old woman presented with a 2-week period of fever that developed while she was in the third week of a four-week holiday in Egypt. She had chills, myalgia and headache, and the last two days she complained of abdominal pain, vomiting and watery diarrhoea that occurred 6-8 times a day. She had swum in a swimming pool in the desert. She was vaccinated against Hepatitis A and B, diphtheria, tetanus and poliomyelitis. Her medical history was unremarkable. On physical examination she had a temperature of 38.4°C, blood pressure 132/69 mmHg and a pulse of 90/min, without lymphadenopathy and without hepatosplenomegaly. There were no skin abnormalities. Laboratory investigation showed a lymphocytosis ($4.5 \times 10^9/L$, reference value $1.0-4.0 \times 10^9/L$) with mostly atypical lymphocytes, increased inflammatory parameters and elevated liver enzymes (Table 1). Malaria was excluded on blood smear. Chest X-ray and ultrasonography of the abdomen were normal.

The patient was admitted and she had fluid resuscitation. Blood, urine and stool samples were cultured and serological tests against several microorganisms were performed. Afterwards cefotaxime was started empirically. The patient recovered gradually and the stools normalised in the course of ten days. Enzyme-linked fluorescence assay for CMV IgM was positive. Other blood, urine and stool cultures and serology HIV, EBV and schistosomiasis remained negative. The cefotaxime was stopped and the patient was discharged. Several weeks afterwards, she had completely recovered and laboratory results had normalised.

Discussion

This case represents an immunocompetent patient with a primary CMV infection, which presented as a gastroenteritis and hepatitis. The diagnosis was confirmed on serological grounds. An endoscopy was not performed. While manifestations of CMV infection in immunocompromised hosts have been extensively reported in biomedical literature, those observed in immunocompetent patients have received comparatively little attention. To our knowledge, there have been only anecdotal reports of clinically significant CMV gastrointestinal infection in healthy adults.⁶

CMV infection in immunocompetent patients can affect almost every organ system.

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In a decreasing order of frequency, severe organ involvement in the reviewed reports included: the gastrointestinal tract (colitis), the central nervous system (meningitis, encephalitis, myelitis), hematologic manifestations (hemolytic anemia and thrombocytopenia), the eye (uveitis, retinitis), the liver (hepatitis), the lung (pneumonitis) and thrombosis of the arterial and venous system (venous thrombosis, portal vein thrombosis, pulmonary embolism).⁷⁻¹¹

As is evident in the review of Rafailidis *et al.*,⁷ the left-sided colon is most frequently affected by severe CMV disease in immunocompetent patients. The mortality rates, however, varies between 6.2% and 32%.⁷⁻⁹ There is a trend of higher mortality in patients over 55 years of age. Spontaneous remission occurred in 32% of patients. Male gender, immune-modulating diseases, and surgery were associated with worsened survival. Younger patients had a milder course, with a significant rate of spontaneous resolution and no associated mortality.⁸

Rarely, *Pneumatosis intestinalis* has been described in patients with a primary CMV infection.^{12,13} Based on the fact that CMV is known to cause intestinal ulcers, van der Jagt *et al.* postulate a causal relationship between CMV and *Pneumatosis intestinalis*.¹³

A special population afflicted by CMV disease consists of patients with pre-existing inflammatory bowel disease. CMV infection in patients with untreated inflammatory bowel disease can potentially cause severe complications, such as toxic megacolon, colovesical fistula, perforation and peritonitis.¹⁴

No conclusive conclusions regarding the use of antiviral treatment in immunocompetent patients with severe CMV infection can be drawn from the data in the literature.⁷⁻⁹ The

Table 1. Laboratory data at time of admission.

Hematology (unit)		Liver enzymes (unit)		Chemistry (unit)	
ESR (mm/h)	39	γGT (IU/L)	313	Sodium (mmol/L)	132
Hemoglobin (g/dL)	14.7	ASAT (IU/L)	91	Potassium (mmol/L)	3.7
Thrombocytes (×10 ⁹ /L)	374	ALAT (IU/L)	84	Creatinine (μmol/l)	70
Leucocytes (×10 ⁹ /L)	11.8	AF (IU/L)	132	Urea (mmol/L)	5.8
Neutrophils (x 10 ⁹ /L)	6.1	LDH (IU/L)	396	CRP (μmol/L)	56
Lymphocytes (×10 ⁹ /L)	4.5				
Monocytes (×10 ⁹ /L)	1.1				
Eosinophils (×10 ⁹ /L)	0.9				

ESR, erythrocyte sedimentation rate; CRP, C-reactive protein; AP, alkaline phosphatase; γGT, gamma glutamyl transferase; ASAT, aspartate aminotransferase; ALAT, alanine aminotransferase; LDH, lactate dehydrogenase.

improvement observed in some of the treated patients may have been related to the typically self-limiting course of the disease, and thus cannot be attributed with certainty to a treatment effect. To evaluate the potential role of specific antiviral treatment for immunocompetent patients with severe CMV disease, randomized controlled trials are necessary.

Ganciclovir is the therapy of choice for a CMV infection.¹⁵ It is given at a dose of 5 mg/kg intravenously every 12 h for 2-3 weeks. Foscarnet is given in cases of ganciclovir resistance or intolerance.¹⁵ Presumed benefit of specific antiviral treatment in cases of CMV infection, regarding immunocompetent patients, should be weighed against the potential toxicity of therapy. Care should be exercised because ganciclovir can cause myelosuppression, central nervous system disorders, hepatotoxicity, irreversible infertility, or teratogenesis, whereas foscarnet is nephrotoxic and can cause electrolyte disturbances. Long-term administration of these agents may lead to resistant viral strains.

Conclusions

Our case shows that a primary CMV infection in an immunocompetent woman can have

an unusual presentation. A primary CMV infection should be considered in immunocompetent patients with severe gastro-enteritis.

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