

Case Report,

Extensive Vascular Thrombosis in Immunocompetent Patients with Acute Cytomegalovirus Infection: A Case Report of a Peculiar Phenomenon

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Abstract:

Background: acute Cytomegalovirus (CMV) infection in the immunocompetent usually asymptomatic or may present as a mononucleosis syndrome, but sometimes it is present as colitis, meningitis, encephalitis, or as ocular involvement and others. Thrombosis is considered an extremely rare manifestation described only in a scarce number of case reports.

Case presentation: a 30-years-old immunocompetent patient present with extensive vascular thrombosis shortly after a diagnosis of CMV infectious mononucleosis was established. Other than morbid obesity, no other risk factors existed. Therapeutic anticoagulation was associated with clinical improvement.

Conclusion: CMV infection can be associated with acute venous thrombosis in immunocompetent patients. An active search for both underlying prothrombotic conditions and other organ involvement sounds reasonable and should be treated, if found, accordingly.

Key words: acute cytomegalovirus infection, immunocompetent, superior mesenteric thrombosis, inferior mesenteric thrombosis, portal vein thrombosis.

Background:

Cytomegalovirus (CMV) infections are widespread, affecting between 40% to 100 % of the adult population. It is more common in low socioeconomic communities and developing countries.¹⁻²

The spectrum of CMV illness varies depending on the host. Whereas in the immunocompetent host is generally asymptomatic or may be present as a mononucleosis syndrome. In immunocompromised patients it causes severe organ complications with significant morbidity and mortality.³⁻⁴ CMV infections in immunocompetent can involve numerous systems including of high frequency: the Gastrointestinal tract (colitis) and Nervous system (meningitis, encephalitis and transverse myelitis), but in others, such as pulmonary, ocular and cardiovascular manifestations it can occur as well.^{3,5-9} An unusual, but serious complication in the immunocompetent, as few case reports suggest,

is venous thrombosis. Usually, in the absence of known risk factors for hypercoagulability. The development of venous thrombosis at sites such as the portal, splanchnic and mesenteric veins is extremely rare.¹⁰⁻¹³

The exact relationship between CMV infection and thrombosis is not fully understood yet.

Case presentation:

A 30-years-old healthy man, who was diagnosed a few days earlier with CMV infectious mononucleosis, was present at the emergency with abdominal pain, vomiting, and diarrhea. Physical examination revealed splenomegaly. Blood tests showed mild leukocytosis and elevated liver enzyme. Abdominal X rays and abdominal ultrasound were normal. The patient was discharged with a diagnosis of CMV hepatitis.

The next day he was represented with worsening of

his complaints, in addition to bloody diarrhea. His vital signs were normal except for a tachycardia (120 bpm), Physical examination was consistent with splenomegaly and cherry red in rectal examination. Blood tests showed leukocytosis, thrombocytosis, and high CRP, no lactatemia or other abnormalities were found.

A CT was performed and revealed an extensive thrombosis in superior and inferior mesenteric veins, a branch of the portal vein, and the internal iliac vein as well. Consequently, the patient was admitted to the ICU. Heparin was started but later switched to Enoxaparin. No risk factor besides morbid obesity (120 kg) was presented. Lupus anticoagulant, anticardiolipin, and anti β 2 glycoprotein antibodies were negative. Jak2 mutation was negative and paroxysmal nocturnal hemoglobinuria was excluded.

Ophthalmic exam and sigmoidoscopy were conducted and were normal excluding other organ involvement.

Given a low viral load, preserved white blood cell count and inflammatory markers, and lastly the absence of other organ involvement an Antiviral therapy was not administered. In the course of the next few days, few peaks of high temperatures were documented. However, clinical and laboratory improvement was seen, a decrease in the viral load was observed too eventually, the patient was discharged in good condition with low molecular weight heparin therapy.

Discussion and conclusion:

The spectrum of human illness caused by cytomegalovirus (CMV) is diverse and mostly dependent on the host. Thrombosis in the abdominal vessels in the presence of CMV infection is a rare event in immunocompetent, reported only in a scarce number of case reports. Usually, without any associated underlying prothrombotic conditions. Still, an active search for such conditions seems reasonable¹³⁻¹⁰.

In our case, an acute CMV infection was complicated with extensive thromboses in several vessels including superior and inferior mesenteric, a branch of the portal, and the internal iliac veins. No other obvious risk factors, other than obesity, were known before the patient's admission. Considering the rareness of our case, an active screening for common underlying prothrombotic conditions was conducted. We hypothesized that in our patient the acute CMV infection combined with morbid obesity precipitated the acute and

extensive vascular thrombosis. Anti-coagulation therapy was administered and seemed to improve clinical course. On the other hand, since no justification for antiviral therapy, it was not given.

Acute venous thrombosis is considered a rare manifestation in acute CMV infection. Yet An exact mechanism was not established yet. An active search for both underlying prothrombotic conditions and other organ involvement sounds reasonable and should be addressed properly if found.

References:

- [1.] Krech U. Complement-fixing antibodies against cytomegalovirus in different parts of the world. Bull World Health Organ 1973; 49:103.
- [2.] Ho M. Epidemiology of cytomegalovirus infections. Rev Infect Dis 1990; 12 Suppl 7:S701.
- [3.] Cohen JI, Corey GR. Cytomegalovirus infection in the normal host. Medicine (Baltimore) 1985; 64:100.
- [4.] Horwitz CA, Henle W, Henle G, et al. Clinical and laboratory evaluation of cytomegalovirus-induced mononucleosis in previously healthy individuals. Report of 82 cases. Medicine (Baltimore) 1986; 65:124.
- [5.] Eddleston M, Peacock S, Juniper M, Warrell DA. Severe cytomegalovirus infection in immunocompetent patients. Clin Infect Dis 1997; 24:52.
- [6.] Siegal DS, Hamid N, Cunha BA. Cytomegalovirus colitis mimicking ischemic colitis in an immunocompetent host. Heart Lung 2005; 34:291.
- [7.] Patra S, Samal SC, Chacko A, et al. Cytomegalovirus infection of the human gastrointestinal tract. J Gastroenterol Hepatol 1999; 14:973.
- [8.] Orlikowski D, Porcher R, Sivadon-Tardy V, et al. Guillain-Barré syndrome following primary cytomegalovirus infection: a prospective cohort study. Clin Infect Dis 2011; 52:837.
- [9.] López-Contreras J, Ris J, Domingo P, et al. Disseminated cytomegalovirus infection in an immunocompetent adult successfully

- treated with ganciclovir. *Scand J Infect Dis* 1995; 27:523.
- [10.] Abgueguen P, Delbos V, Chennebault JM, et al. Vascular thrombosis and acute cytomegalovirus infection in immunocompetent patients: report of 2 cases and literature review. *Clin Infect Dis* 2003; 36:E134.
- [11.] Fridlender ZG, Khamaisi M, Leitersdorf E. Association between cytomegalovirus infection and venous thromboembolism. *Am J Med Sci* 2007; 334:111?
- [12.] Abgueguen P, Delbos V, Ducancelle A, et al. Venous thrombosis in immunocompetent patients with acute cytomegalovirus infection: a complication that may be underestimated. *Clin Microbiol Infect* 2010; 16:851.
- [13.] Bertoni M, Squizzato A, Foretic M, et al. Cytomegalovirus-associated splanchnic vein thrombosis in immunocompetent patients: A systematic review. *Thromb Res* 2018; 168:104.