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CONCOMITANT INFECTION WITH EPSTEIN-BARR VIRUS AND CYTOMEGALOVIRUS INFECTION LEADING TO PORTAL VEIN THROMBOSIS

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☐ **Abstract—Background: Portal vein thrombosis (PVT) is well recognized as a complication of hepatic cirrhosis and is likely to be suspected in patients with hypercoagulable syndromes, however, it is rarely recognized as a possibility in otherwise healthy patients with Epstein-Barr virus (EBV) or cytomegalovirus (CMV) infection. We report a case of a healthy 27-year-old man with fever and weight loss who was found to have PVT in the setting of acute EBV and CMV infection. Case Report: A 27-year-old man with no known medical history presented to the emergency department (ED) for fever for 18 days. Patient reported daily high fevers associated with chills, night sweats, generalized myalgia, nausea with appetite loss, and unquantified weight loss. Vital signs showed temperature of 100.5°F. Patient reported discomfort upon palpation of abdomen on physical examination. There was no lymphadenopathy, cardiac murmur, rash, or jaundice. Laboratory tests revealed titers diagnostic of acute EBV and CMV infection with elevated liver function tests and leukocytosis with lymphocyte predominance (white blood cell count 15,400/μL; 43% atypical lymphocytes). Computed tomography of the abdomen/pelvis with i.v. contrast showed a filling defect in the anterior portal vein. The patient was admitted with the ED diagnosis of PVT secondary to viral infection and was initiated on anticoagulation. Why Should An Emergency Physician Be Aware of This?: Although rarely considered, CMV has been associated with PVT in up to 6% of cases, and EBV infection has been implicated as well. Emergency physicians should be aware of this potentially serious complication of these common viral infections and consider imaging modalities to rule out thrombosis, if appropriate.** © **2019 Elsevier Inc. All rights reserved.**

☐ **Keywords—EBV infection; CMV infection; portal vein thrombosis; fever of unknown origin; abdominal pain**

INTRODUCTION

Portal vein thrombosis (PVT) is well recognized as a complication of hepatic cirrhosis and is likely to be suspected in patients with hypercoagulable syndromes. However, it is rarely recognized as a possible diagnosis in otherwise healthy young adults with Epstein-Barr virus (EBV) or cytomegalovirus (CMV) infection. We report a case of a healthy 27-year-old man with fever and weight loss for more than 2 weeks, who was found to have PVT in the setting of acute EBV and CMV infection.

CASE REPORT

A 27-year-old man with no known medical history presented to the emergency department (ED) for fever lasting 18 days. Patient reported daily high fevers associated with chills, night sweats, generalized myalgia, nausea with appetite loss, and unquantified weight loss.

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The patient had visited other hospital EDs twice before with negative workup. He denied sick contacts, recent outdoor activities, traveling abroad, ingestion of raw food, or history of incarceration or homelessness. The patient was a nonsmoker with occasional alcohol and marijuana use. He was sexually active with one female partner for more than 1 year, had a history of chlamydia that was treated 2 years earlier, but otherwise no history of sexually transmitted diseases. Family history was noncontributory. Vital signs were normal except for temperature of 38.1°C (100.5°F). Patient reported discomfort upon palpation of abdomen on physical examination. There was no lymphadenopathy, cardiac murmur, rash, or jaundice. Laboratory examination was notable for a lymphocyte predominant leukocytosis with a white blood cell count of 15,400/μL with 43% reactive lymphocytes; liver function tests were elevated, as were markers of inflammation: total bilirubin 0.8 mg/dL (reference range 0.1–1.2 mg/dL), alkaline phosphatase 259 U/L (reference range 38–126 U/L), aspartate aminotransferase 182 U/L (reference <36 U/L), alanine aminotransferase 288 U/L (reference <46 U/L), lactate dehydrogenase 655 U/L (reference range 100–220 U/L), C-reactive protein 99 mg/L (reference <5.1 mg/L), erythrocyte sedimentation rate 15 mm/h (reference range 0–13 mm/h), creatine phosphokinase 57 U/L (reference range 30–200 U/L). Coagulation studies were normal with international normalized ratio 1.1 and partial thromboplastin time 29.5 s. Other workup laboratory tests were negative, including hepatitis panel (hepatitis A, B, and C), HIV, urine toxicology, and serum acetaminophen level. Computed tomography of the abdomen/pelvis with i.v. contrast showed borderline enlarged liver and spleen, with a filling defect in the anterior portal vein and enlarged paraportal lymph nodes (Figure 1). Patient was admitted to the medicine service with the ED diagnosis of PVT secondary to presumed EBV infection and initiated on anticoagulation. Later, laboratory tests revealed EBV antibody (Ab) viral capsid antigen (VCA) immunoglobulin (Ig)M > 160 U/mL (positive if > 43.9 U/mL), EBV Ab VCA IgG 209 U/mL (positive if > 21.9 U/mL), EBV DNA PCR 120 copies/mL (normally undetectable), CMV Ab IgM 129 U/mL (positive if > 34.9 U/mL), CMV Ab IgG > 10 U/mL (positive if > 0.69 U/mL), and CMV DNA polymerase chain reaction 63,000 IU/mL (normally undetectable). These titers are diagnostic of active EBV and CMV infection.

DISCUSSION

We present a case of an immunocompetent previously healthy patient who presented to the ED with prolonged fever with systemic symptoms. The patient was found to have PVT secondary to infection with EBV, CMV, or both. Both viruses have been reported to be associated with PVT; CMV has been reported far more commonly, with a recent meta-analysis noting an incidence of thrombosis among acute CMV infection in hospitalized patients to be 6.4% (1–3). The incidence is suspected to be higher in outpatient populations, as imaging modalities to rule out thrombosis are rarely conducted in the ED or primary care settings. Occasional immunoreactivation of latent EBV has been reported in acute CMV infection and other herpesvirus infections, which complicates the clinical picture (4,5). PVT is an underrecognized yet serious complication of both EBV and CMV infection.

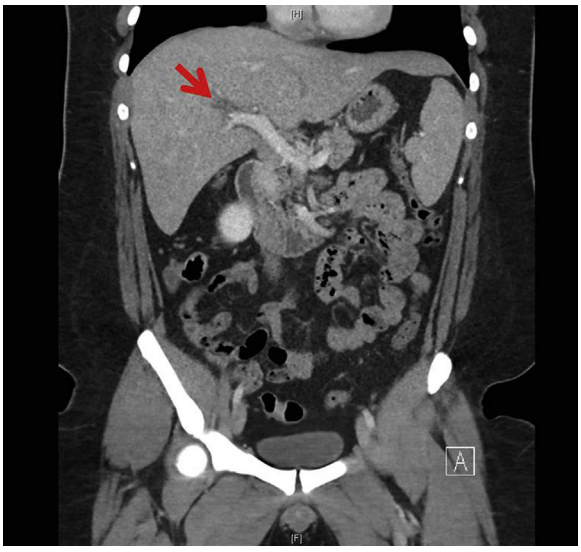

Figure 1. Contrast-enhanced computed tomography scan of the abdomen/pelvis (axial view). Liver and spleen are borderline enlarged with filling defect in anterior portal vein (red arrow). Paraportal lymph nodes are also enlarged.

WHY SHOULD AN EMERGENCY PHYSICIAN BE AWARE OF THIS?

Although rarely considered, CMV has been associated with PVT in up to 6% of cases and EBV infection has been implicated as well. Emergency physicians should be aware of this potentially serious complication of these common viral infections and consider imaging modalities to rule out thrombosis in appropriate settings.

REFERENCES

1. Galli L, Gerdes VE, Guasti L, Squizzato A. Thrombosis associated with viral hepatitis. J Clin Transl Hepatol 2014;2:234–9.

2. Mashav N, Saar N, Chundadze T, Steinvil A, Justo D. Epstein-Barr virus-associated venous thromboembolism: a case report and review of the literature. Thromb Res 2008;122:570–1.
3. Justo D, Finn T, Atzmony L, et al. Thrombosis associated with acute cytomegalovirus infection: a meta-analysis. Eur J Intern Med 2011; 22:195–9.
4. Aalto SM, Linnavuori K, Peltola H, et al. Immunoreactivation of Epstein-Barr virus due to cytomegalovirus primary infection. J Med Virol 1998;56:186–91.
5. Obel N, Høier-Madsen M, Kangro H. Serological and clinical findings in patients with serological evidence of reactivated Epstein-Barr virus infection. APMIS 1996;104:424–8.