

Venous Thromboembolism and Cytomegalovirus Infection in Immunocompetent Adults

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Cytomegalovirus infection is rarely associated with venous thromboembolism in immunocompetent patients [1]. We present three immunocompetent patients with these concomitant conditions.

Patient Descriptions

Patient 1

A 21 year old female was hospitalized in January 2002 with left leg pain. Her mother and grandfather had a history of deep vein thrombosis and she was using oral contraceptives. Physical examination revealed an enlarged and painful left leg. A femoral-popliteal DVT was demonstrated by Doppler ultrasound and the patient was put on anticoagulant treatment. On the third day of hospitalization she developed low grade fever. Physical examination, chest X-ray and urinalysis were normal. Complete blood count showed lymphocytosis and monocytosis. Serological tests for Epstein-Barr virus immunoglobulin M antibodies were negative. Serological tests for cytomegalovirus IgM antibodies were positive twice. Anticardiolipin IgM antibodies were also positive [Table].

Patient 2

A 35 year old male with left leg pain and low grade fever was hospitalized in May 2004. His left leg was enlarged and painful. Tibial-popliteal DVT and saphenous superficial vein thrombosis were demonstrated by Doppler ultrasound. Anticoagulant treatment was introduced. The patient had mild thrombocytosis and mild lymphocytosis. Serological test for

Epstein-Barr virus IgM antibodies was negative. The serological test was strongly positive (100 U/ml) for cytomegalovirus IgM antibodies. Hypercoagulability workup revealed factor V Leiden heterozygous mutation as well as MTHFR homozygous mutation [Table].

Patient 3

A 29 year old female with chest pain, dyspnea and low grade fever was hospitalized in September 2005. She was taking oral contraceptives. Physical examination revealed normal breath

sounds. The chest X-ray was also normal. Bilateral pulmonary emboli were diagnosed by chest computed tomography, and the patient was given anticoagulant treatment. No DVT was demonstrated by Doppler ultrasound of the lower extremities. Her fever continued over the following days. Physical examination was unremarkable. Complete blood count showed mild lymphocytosis. No Epstein-Barr virus IgM antibodies were found. Serological tests for cytomegalovirus IgM antibodies were positive twice. CMV PP65 antigenemia assay was

Table. Laboratory variables of the reported patients

	Hypercoagulability workup	Complete blood count and differential
Patient 1		
Protein S activity	Negative/normal	WBC 9500 cell/ml
Protein C free	Negative/normal	54% lymphocytes
AT III activity	Negative/normal	10.6% monocytes
Factor VIII activity	Negative/normal	Platelets 319,000
Anticardiolipin IgM	Positive	
PT/PTT	Negative/normal	
Patient 2		
Protein S activity	Negative/normal	WBC 11,900
Protein C free	Negative/normal	50% lymphocytes
AT III activity	Negative/normal	8.5% monocytes
Factor II G20210A	Negative/normal	Platelets 510,000 cell/ml
Factor V Leiden	Heterozygote	
MTHFR	Homozygote	
PT/PTT	Negative/normal	
Patient 3		
Homocysteinemia	Negative/normal	WBC 9100 cell/ml
AT III activity	Negative/normal	50% lymphocytes
Factor V Leiden	Negative/normal	4.4% monocytes
Factor II G20210A	Negative/normal	Platelets 308,000 cell/ml
Factor VIII activity	Negative/normal	
Circulating anticoagulant	Negative/normal	
PT/PTT	Negative/normal	

AT = antithrombin, PT = prothrombin time, PTT = partial thromboplastin time, WBC = white blood cells, MTHFR = methylene tetrahydrofolate reductase.

DVT = deep vein thrombosis

Ig = immunoglobulin

CMV = cytomegalovirus

positive. Hypercoagulability workup was unremarkable [Table].

Comment

Cytomegalovirus infection might initiate thrombosis by enhancing platelet and leukocyte adhesion to endothelial cells, by facilitating factor X activation and by inducing antiphospholipid antibodies production [1-3]. Increased levels of CMV antibodies might also be associated with increased levels of factor VIII [4]. Still, the precise mechanism by which CMV triggers thrombosis is not fully understood.

We presented three immunocompetent patients with venous thromboembolism and CMV infection. In our opinion, CMV infection was the precipitating factor to trigger VTE in these patients, although

VTE = venous thromboembolism

all the patients had risk factors for VTE. VTE is commonly accompanied by fever [5]. Our findings are too premature to recommend that CMV infection be investigated in all patients with VTE and fever. However, physicians might overlook the signs of CMV infection in patients with VTE and fever. Hence, we wish to raise the level of awareness for signs of CMV infection in immunocompetent patients with VTE and fever.

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