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Cytomegalovirus infection and autoimmunity: cause and effect relationship?

Eleni E Magira

National and Kapodestrian University of Athens, Greece

Abstract

Cytomegalovirus pneumonia in non-immune compromised ICU patients is a largely unexpected and probably underestimated diagnosis. We present a case of a 57-year-old woman, who was admitted to our ICU, because of reduced level of consciousness and shortness of breath, required intubation and mechanical ventilation. Purple discoloration on both hands consisted with Raynaud's phenomenon was observed.

Her white-cell count was normal and the platelet count was 57x109 per L. Peripheral blood smear demonstrated anisocytosis,

with schistocytes and nucleated RBCs. The creatinine level was 3.92 mg/dl, blood urea nitrogen 191 mg/dl which both were deteriorated on a daily basis. Human immunodeficiency virus (HIV) tested negative, but depressed numbers of circulating CD4+T cell lymphocytes (< 200 cell/cumm) was measured on more than one occasion. We assumed that this patient had thrombotic thrombocytopenic purpura (TTP) and plasma exchange treatment was started along with prednisolone (1mg/kgr) and itravenous immune globulin. Her condition gradually improved. Despite the improvement, her Raynaud's became increasingly severe. Plasma renin activity was measured high at 106.0 (normal range 30-50). We suspected that the patient had scleroderma renal crisis (SRC). Strict blood pressure control with captopril for SRC management was started. Although the patient was awake and she followed simple commands after cessation of the sedation she was difficult to wean from ventilator. Chest CT scan revealed bilateral mixed areas of ground-glass opacity and left pleural effusion. In the context of her idiopathic CD4+T cell lymphocytopenia and the CT findings, bronchoscopy was performed. Polymerase chain reaction assay of bronchoalveolar lavage fluid was positive for cytomegalovirus (CMV) (5,5 x105 copies). Real time PCR for CMV from peripheral blood gave also positive result (2,5x 104 copies) while was negative at her admission. A diagnosis of CMV pneumonia was reached and ganciclovir was started. The symptoms and radiographic abnormalities were resolved after this therapy and the patient gradually liberated from the ventilator.

This is a rare case of invasive CMV disease in a patient who is not compromised by HIV infection or transplantation but she has severe CD4+ lymphopenia. CMV is a marker of immunosuppression. Perhaps cofactors such as peripheral blood CD4 count may be important to provide a better estimate of viral burden and to determine who has pneumonitis. CMV infections even in immunocompetent ICU patients have been associated with poor outcomes. Therefore, CMV-related diseases, including pneumonitis, need to be treated, especially among severely ill patients. Early diagnosis and appropriate treatment are essential. Although the patient had a complicated and long ICU stay (7-months), she gradually liberated from the ventilator, remained free of infections, improved her lymphopenia and eventually she discharged to home