CASE REPORT

Severe exertional dyspnea as the prime manifestation of acute cytomegalovirus infection in an immunocompetent adult

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Abstract

Primary cytomegalovirus infection is rare among immunocompetent hosts. We present a case of acute cytomegalovirus infection in a young immunocompetent female with pulmonary and hepatic involvement, admitted to our department due to severe exertional dyspnea. Patient's symptoms were completely atypical. Ganciclovir was administered succeeding complete clinical and laboratory signs's resolution. Hippokratia 2009; 13 (3): 181-183

Key words: cytomegalovirus, immunocompetent, dyspnea, pneumonitis, ganciclovir

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Primary CMV infection, although frequently reported in immunocompromised populations causing severe symptoms, is rather asymptomatic and therefore underdiagnosed in immunocompetent individuals. Pulmonary involvement, as part of the CMV infection, may be life threatening, especially when it is atypically presented.

Case report

A 40 years old nurse was admitted on 30 Jan 2008 to our department due to acute presentation of severe exertional dyspnea. Fatigue, malaise and generalised myalgias and arthralgias were also reported by the patient starting at least 10 days before admission. The patient had a free medical history, while the physical examination at admission revealed weight: 60 kg, height: 162 cm, axillary body temperature of 36.5 ^{0}C, blood pressure of 125/75 mm Hg and a heart rate ranging between 90 and 105 beats/min. Despite patient's dyspnea and tachypnea of about 30 breaths /min the ausculatation of heart and lungs was normal without any added sounds. There were no signs of central or peripheral cyanosis, no palpable lymph nodes, while the palpitation, percussion and auscultation of the abdomen revealed nothing abnormal. Chest X Ray was normal, the ECG did not display any abnormalities and pulse oximetry as well as arterial blood gas analysis showed a saturation of about 95% falling to 87% after minor patient's exertion. $PaCO_2$ ranged in normal limits.

Full blood count at admission revealed: normal white blood cell count WBC: 5080/μL (Neutrophiles: 47.3% and Lymphocytes: 42.3%) normal erythrocyte sedimentation rate (ESR=15mm/1h) and a normal hematocrit and platelet number (Ht: 38.7% and PLT:250x10^3/μL). Routine biochemical testing showed elevated aspartate transaminase (AST): 99IU/L (normal range 0-41IU/L), alanine aminotransferase (ALT):113 IU/L (normal range 0-38IU/L) and lactate dehydrogenase (LDH):380 IU/L(normal range 0-210 IU/L) with all other parameters tested (alkaline phosphatase, gamma glutamyltranspeptidase, bilrubin , glucose, urea, creatinine, K^+, Na^+, Ca^{++}, phosphates, albumin, creatine kinase (CK MB) and Troponin I (TnI)) ranging within normal limits. No alterations were observed concerning CK MB and TnI values after 24 and 48 hours. There was no prolongation of prothrombin time while a clear elevation in D-Dimers: 1554.1 mg/dL (normal value<450 mg/dL) and fibrinogen: 582.3 mg/dL (200-400 mg/dL) was observed. Due to the increased D-Dimers and LDH values in combination with patient's dyspnea, we sought to exclude the possibility of pulmonary embolism. Spiral CT scan of thorax revealed normal vasculature with minor findings suggesting interstistial pneumonitis (Figures 1,2). Echocardiographic evaluation

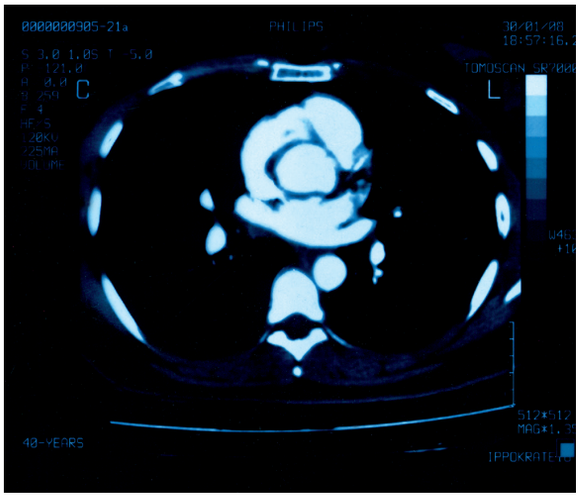

Figure 1: Spiral CT scan image showing normal lung vasculature.

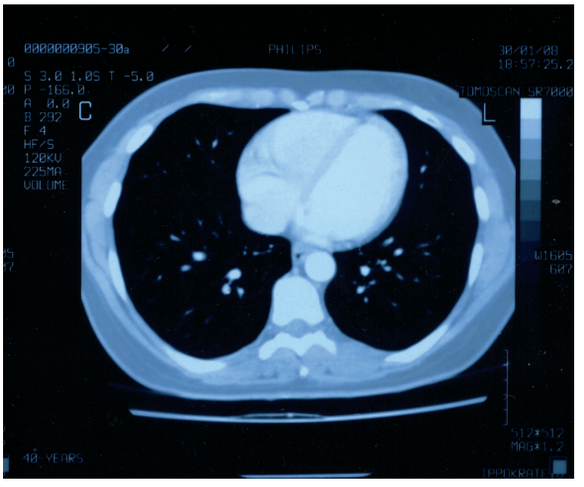

Figure 2: CT scan image of thorax showing minor findings suggesting interstitial pneumonitis.

showed a normal ejection fraction, of about 70%, without evidence of left or right ventricular dysfunction. Ultrasound of the abdomen revealed a mild enlargement of the liver with no signs of vein thrombosis using Doppler flowmetry pattern.

A primary cytomegalovirus (CMV) infection was suggested and finally defined by concomitant presence of high IgM title: 65 IU/mL (<15 IU/mL) (VIDAS CMV IgM) and a low CMV IgG :<0.2 IU/mL (normal values 0-0.4 IU/mL) (VIDAS CMV IgG). A repetition of serologic testing after a two weeks period revealed a further CMV IgM elevation reaching 180 IU/mL, an IgG increase of 2.0 IU/mL as well as a low CMV IgG Avidity (VIDAS CMV IgG Avidity) of about 0.078 (low). No other source of infection was found. Microbiological culture of blood and urine were all negative. Further serological tests to detect specific antibodies against human immunodeficiency virus, Ebstein-Barr virus, hepatitis A, B and C virus, Mycoplasma pneumoniae, Chlamydia spp., Legionella pneumophila, Coxiella burnetti, Rickettsia conorii and typhi were negative. Hepatic and pulmonary involvement as a result of systemic immunologic disorders was excluded by means of highly specific autoantibodies, such as antinuclear and antimitochondrial antibodies, anti-smooth-muscle antibodies, perinuclear anti-neutrophil cytoplasmic antibodies and antibodies to liver/kidney microsomes. Probability of a co-existing malignancy as a cause of cell mediated immunodeficiency was excluded by means of whole body CT scanning and tumor marker's testing. Qualitative polymerase chain reaction (CMV-PCR) confirmed viraemia in blood samples.

Patient presented a mild symptom relief 48 hours after admission with severe dyspnea reinforcement and transaminase elevation seven days later. Even though, she received supportive treatment without specific antiviral therapy during the first week at hospital, she was finally given ganciclovir 1gr twice daily per os for 14 days. At disharge day the patient was remarkably improved with resolution of all pathological laboratory findings. At the follow up examination 6 months later the patient remained asymptomatic with no signs of clinical or biochemical relapse.

Discussion

CMV infection although common between immunocompromised patients causing often multi-organ failure and increased mortality[1,2], is rather asymptomatic and therefore underdiagnosed in immunocompetent individuals, developing in approximately 10% of cases a self limiting mononucleosis like syndrome[3,4]. Abnormal liver function test findings, malaise, jaundice, sweats and pyrexia form the most common cluster of symptoms with the 32% of patients presenting with this symptom combination[2]. Pulmonary involvement presenting as interstitial pneumonitis although rare might be life threatening even in immunocompetent hosts[2].

We present the case of a 40 year old woman who was admitted to our department for acute, severe, exertional dyspnea. The patient was afebrile during all her hospitalisation period, while she reported concomitant malaise, myalgias and arthralgias. The laboratory examinations revealed a mild abnormality of liver function tests, no haematological test deviations while thorax spiral CT scan excluded pulmonary embolism showing mild interstitial infiltrates. Virological diagnosis was established serologically by CMV specific antibody detection and primary infection was proved by CMV antibody seroconversion and low CMV IgG avidity.

CMV induced pneumonitis and hepatitis of our patient were atypically presented. Although liver function abnormalities are frequently encountered in patients with symptomatic CMV infection, subclinical transaminitis is the most common finding in immunocompetent patients, with less typical the elevations of alkaline phosphatase and total bilrubin[4]. Transaminase elevation in our patient never reached high levels (up to 4-fold), without biochemical evidence of cholestasis. Dyspnea remained the main symptom directing diagnostic effort into primarily excluding acute pulmonary or cardiological events. Minor interstitial infiltrates were only seen in CT scan suggesting a possible viral infection. A thorough review of existing literature showed few published cases of CMV induced pneumonitis in immunocompetent patients[5-7].

Use of ganciclovir in our patient was considered absolutely necessary due to symptom and aminotranspherase elevation relapse. There is little experience concerning use of antiviral drugs in immunocompetent hosts[7]. Since CMV infection is self limited with complete recovery over a period of days to weeks, it is difficult to prove whether antiviral therapy has a significant impact on the clinical outcome[4]. The possible presumed benefits of antiviral therapy should be weighed against its possible toxicity even though non important adverse-effects have been reported till now in reviewed cases[7]. In our patient use of ganciclovir proved efficacious leading to complete symptom and sign resolution, causing no side effects.

In conclusion, interstisial pneumonitis and hepatic

involvement are rare primary manifestation of CMV infection in an apparently immunocompetent host. The diagnostic approach was made even more difficult because of symptoms' 'atypical' presentation (no fever, acute exertional dyspnea and mild liver enzyme elevation). Serologic testing, especially the detection of IgM antibodies elevation combined with low CMV IgG avidity, can confirm primary infection, while the administration of antiviral agents in immunocompetent hosts remains controversial regarding possible toxicity and infection's self-limiting character.

Conflict of interest: None declared

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