Iranian Journal of Clinical Infectious Diseases
***2009;4(4):238-240***


**CASE REPORT**

# Pneumonitis due to cytomegalovirus in an immunocompromised patient

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## ABSTRACT

**Background**: Cytomegalovirus **(**CMV) pneumonia is one of the most important infections in immunocompromised host. Immunosuppressive therapy plays a major role in reactivation of CMV.

**Patient**: The patient was a 56-year old lady, known case of chronic lymphocytic leukemia (CLL), had been taking prednisolone and chlorambucil, who presented with dyspnea and productive cough. After bronchoalveolar lavage (BAL), transbronchial lung biopsy (TBLB) and CT-guided biopsy, CMV pneumonia was diagnosed.

**Conclusion**: CMV should be suspected as a cause of pneumonia in immunocompromised patient and diagnosis may require invasive procedures.

**Keywords**: *Cytomegalovirus, Pneumonia, Immunocompromised state.*
***(Iranian Journal of Clinical Infectious Diseases 2009;4(4):238-240).***

## INTRODUCTION

Even when treated with antiviral therapy, cytomegalovirus pneumonia is associated with high morbidity and mortality in immunocompromised patients (1). Immunosuppressive therapy plays a major role in reactivation of CMV. Cytologic drugs such as cyclophosphomide and azathioprine are sufficient in themselves to reactivate CMV. Corticosteroids alone are not able to enhance CMV infection but act synergistically with other agents (2).

## CASE PRESENTATION

The patient was a 56-year old lady, known case of chronic lymphocytic leukemia (CLL), since 3 years ago. She had been taking prednisolone and chlorambucil, and presented with productive cough and dyspnea.

CXR and high resolution CT-scan (HRCT) of lung showed bilateral patchy and nodular infiltration more prominent in middle and lower part (figures 1-3). In laboratory analysis, evaluation of the patient revealed normal white blood cell (WBC) count in complete blood count (CBC), erythrocyte sedimentation rate (ESR):38, fasting blood sugar (FBS):76mg/dl, BUN:13mg/dl, Cr:0.95mg/dl, Na:140meq/dl, and K:4.1meq/dl. Three times sputum smears for acid fast bacilli were negative. Bronchoalveolar lavage (BAL) and transbronchial lung biopsy (TBLB) was achieved. The result was negative for tuberculosis (TB), *Pneumocystis carinii* and malignancy and chronic nonspecific bronchitis was reported. The patient had a positive PP65-Ag of CMV. CT-guided

*Received*: 31 August 2008 *Accepted*: 22 September 2009
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biopsy of lung was also achieved and finally the diagnosis of CMV pneumonitis was confirmed. Then, intravenous ganciclovir started and patient's clinical condition improved. The patient discharged with follow up and maintenance therapy for CMV.

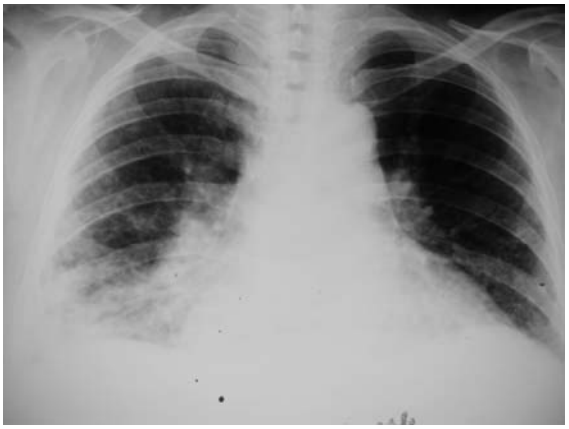

**Figure 1.** CXR of patient with CMV pneumonitis

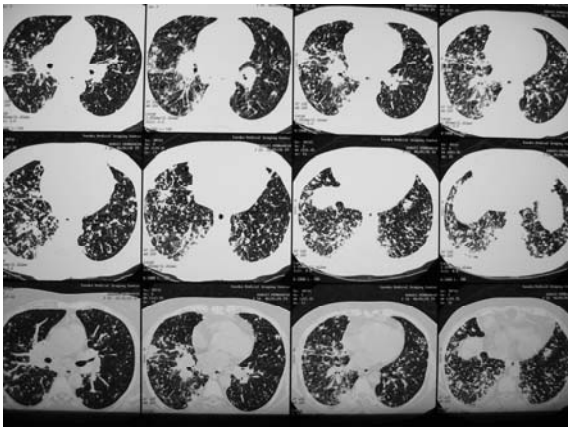

**Figure 2.** Chest CT-scan of patient with CMV pneumonitis

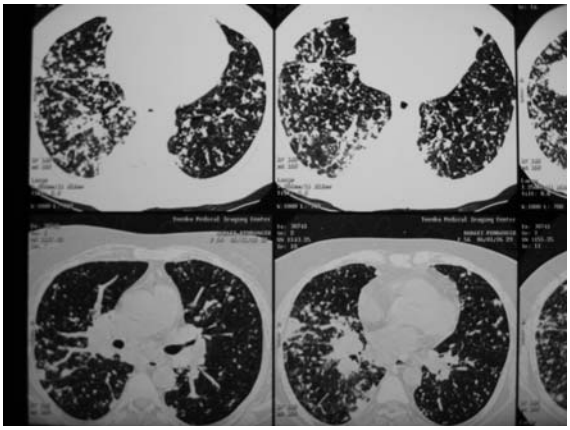

**Figure 3.** Chest CT-scan of patient with CMV pneumonitis

## DISCUSSION

CMV is an important cause of morbidity and mortality in immunosuppressed patients (3). Clinical CMV disease, particularly CMV pneumonitis, greatly impacts the morbidity and mortality of immunosuppressed patients. Important aspects of the biological events underlying the transition from infection to clinical disease remain unclear. Despite that, considerable progress has been made in the design of improved diagnostic techniques and the development of antiviral agents.

Preventive and particularly preemptive therapeutic approaches demand further technical improvements in diagnostic testing. At present, the emphasis in the search for improved diagnostic testing rests on the development of quantitative methods for early detection of the increased viral replicative activity that presumably precedes the onset of CMV disease in infected individuals (4).

In recent years, several assays have been developed for quantification of CMV in blood of immunocompromised patients. The most important and clinically useful diagnostic assay for CMV in blood are: I) viremia, quantifying CMV carried by leukocytes, II) PP65 antigenemia, III) circulating cytoplasmic endothelial cell (CEC) viremia, IV) leukocyte and plasma DNA emia by polymerase chain reaction (PCR) (5). PP65 antigenemia assay enables early and rapid diagnosis of CMV viremia (6). Antigenemia and quantitative-PCR had enhanced and similar predictive values for CMV disease detection when specific cut-off values were used. The choice between these two methods for disease detection may rely less on their efficiency and more on the experience and familiarity with them (7).

There are several methods for diagnosis CMV pneumonia. PCR for BAL and sputum sample is very useful for diagnosis of CMV pneumonia (8). CMV detection in BAL specimen is better with culture than with cytoloty or immunohistochemical method (1). Detection of CMV by centrifugal

culture in one study provides to be only moderately sensitivity (71%) and low specificity (50%).

The diagnosis of CMV pneumonia traditionally has required the use of invasive procedure such as lung biopsy (4). CMV has emerged as an important cause of life-threatening pneumonia in adults with leukemia who have received potent immunosuppressive therapies and stimulated granulocyte transfusions from unscreened donors (9).

In this patient we use CT-guided biopsy for diagnosis after negative results of BAL and TBLB that showed histopathologic changes due to CMV. CMV pneumonia should be considered in every immunocompromised patient with respiratory symptom especially if the patient does not respond to common antimicrobial treatment for bacterial pneumonia.

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