

## Clinical HIV and AIDS Journal

## CMV Pneumonitis with a Cavitory Lung Lesion: A Rare Presentation in HIV

Shamaei M<sup>1\*</sup>  
Tabarsi P<sup>2</sup>  
Nadji A<sup>3</sup>  
Dorudinia A<sup>4</sup>

<sup>1</sup>Clinical Tuberculosis and Epidemiology Research Center, NRITLD, Shahid Beheshti University of Medical Sciences, Tehran, Iran

<sup>2</sup>Mycobacteriology Research Center, NRITLD, Shahid Beheshti University of Medical Sciences, Tehran, Iran

<sup>3</sup>Virology Research Center, National Research Institute of Tuberculosis and Lung Diseases (NRITLD), Shahid Beheshti University of Medical Sciences, Tehran, Iran

<sup>4</sup>Pediatric Respiratory Disease Research Center, NRITLD, Shahid Beheshti University of Medical Sciences, Tehran- Iran

## Abstract

Cytomegalovirus is a major cause of morbidity and mortality in patients with AIDS and immunosuppressed patients. Diagnosis of CMV disease often requires tissue biopsy with histologic evidence of viral inclusions and inflammation. This paper reports a rare case of an HIV-infected patient with a history of anemia, who presented with a cavitory lesion in the lung that has diagnosed as CMV pneumonitis, associated with CMV colitis that eventually the patient developed Acute Inflammatory Demyelinating Polyneuropathy (AIDP).

## Keywords

CMV; Pneumonia; Cavitory; HIV

## Introduction

Cytomegalovirus (CMV) pneumonia is among the leading causes of morbidity and mortality in immune suppressed patients [1,2].

In HIV patients, the presence of CMV in bronchoalveolar lavage (BAL) specimen is not usually indicated for CMV pneumonia [3,4] and definitive diagnosis relies on documented evidence of CMV infection in the pulmonary tissue specimen [5].

On the other hand, pneumonia, with CMV as the only pathogen in pulmonary tissue, has rarely occurred in patients with HIV [6,7]. Chest radiographic findings vary, including reticular or ground glass opacities, alveolar infiltration or nodular opacities but cavitory lesions are rare [8].

This paper reports an HIV-infected patient with a history of anemia, the cavitory lesion due to CMV pneumonitis, associated with CMV colitis that eventually developed acute inflammatory demyelinating polyneuropathy (AIDP).

## Case report

A 61-year-old HIV-positive woman was admitted to Masih Daneshvari Hospital, Tehran with a three-month history of anemia, weakness, dyspnea, cough, fever, chills, bone pain, weight loss (less than 10% of total body weight) and loss of appetite. A complete workup was done for fever, weakness, and anemia that was not diagnostic. Chest x-ray was suspicious to a small cavitory in the left upper lobe, but several sputum smears for *M.tb* were negative. Finally, HIV was confirmed by western blot test and she was referred to our center to rule out TB/AIDS. She has divorced 15 years ago, life-long non-smoker, non- drug abuser and without any exposure to TB. The patient seemed doesn't have any risk factor for HIV.

Considering her critical condition with fever and dyspnea plus HIV status (520000 copies/ml HIV plasma viral load with a CD4 count of 342), highly active antiretroviral therapy (HAART) including efavirenz, lamivudine, zidovudine were administered. Sputum and BAL smears/culture for acid-fast bacillus (AFB) was negative and also real-time PCR for MTB complex was negative too. Regarding chest X-ray finding including interstitial infiltration and cavitory lesion, bronchoscopy procedure was performed that was not diagnostic. BAL smear and culture were negative for bacterial and fungal pathogen and immune staining results for *Pneumocystis jiroveci* were negative.

The patient then underwent computed tomography (CT) guided the biopsy. Pathological study of the detected lesion revealed diffuse interstitial pneumonia in which pneumocytes lining thickened alveolar septa were enlarged with intra nuclear and intra cytoplasmic inclusion. Immuno staining of the specimen was positive for CMV (Figure 1). Tissue culture was negative for MTB complex using Ziehl-Neelsen staining and PCR. Moreover,

## Article Information

DOI: 10.31021/chaj.20181105

Article Type: Case Report

Journal Type: Open Access

Volume: 1 Issue: 1

Manuscript ID: CHAJ-1-105

Publisher: Boffin Access Limited

Received Date: 03 December 2018

Accepted Date: 22 December 2018

Published Date: 27 December 2018

## \*Corresponding author:

Masoud Shamaei

Clinical Tuberculosis and Epidemiology Research Center, NRITLD

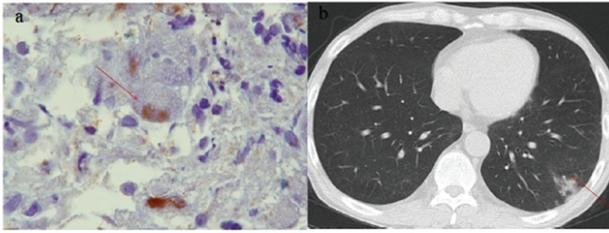
Shahid Beheshti University of Medical Sciences  
Tehran, Iran

Tel: +982127122567

Email: Dr\_shamaei@yahoo.com

**Citation:** Shamaei M, Tabarsi P, Nadji A, Dorudinia A. CMV pneumonitis with a cavitory lung lesion: a rare presentation in HIV. Clin HIV AIDS J. 2018 Dec;1(1):105

**Copyright:** © 2018 Shamaei M, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 international License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.



**Figure 1:** A) Nonspecific type of chronic interstitial pneumonia. Enlarged CMV-infected alveolar pneumocytes can be appreciated. Inset shows Monoclonal antibody to CMV, B) CT scan of lung reveals left upper lobe cavitory lesion

she received colonoscopy because of abdominal pain that revealed the gross involvement of large intestine which was confirmed by pathology studies.

Virology studies showed positive plasma PCR for CMV (690 copies/mL CMV viral load) and positive CMV antigen (*pp65-Ag*), so ganciclovir (intravenous) was started and her condition improved gradually.

Brain CT scan was performed to exclude toxoplasmosis. PCR detection of Toxoplasma and Parvovirus B19 were also negative in a blood sample.

Two months later, she developed weakness of lower extremities that progressed to upper extremities during three days and eventually as a result of the weakness of respiratory muscles, she was incubated in intensive care unit. At this time CMV PCR of plasma became negative. Cerebrospinal fluid (CSF) analysis was negative for herpes simplex virus 1&2 (HSV-1 and HSV-2), varicella-zoster virus (VZV), and CMV. CSF cell count was zero and protein was 50 mg/dl. In India ink preparation no cryptococcus identified. She gradually developed severe pancytopenia and acute renal failure and unfortunately, she was expired with the clinical picture of septic shock. Nerve conduction velocity tests for definitive diagnosis of AIDP could not be performed due to the patient's critical condition.

## Discussion

Lung involvement is one of the main causes of morbidity and mortality in HIV patients [9]. Because of immune insufficiency states, infections are predominant and isolation of more than one organism is common during the autopsy, especially in advanced AIDS cases [10]. Although in endemic countries, tuberculosis is the most common etiology [11], Lung cavitory lesion with CMV is rare [12,13]. In one study, among 21 AIDS patients with cytopathologic evidence of CMV pneumonitis, only one patient had a cavitory lesion [10]. However, differentiation between CMV disease and bacterial infection still remains controversial.

Salomon et al. [8] have reported 41% in-hospital mortality of CMV pneumonia treated with specific anti-CMV, other studies confirm the poor outcome of CMV pneumonia in HIV patients [14].

An autoimmune process, acute inflammatory demyelinating polyneuropathy (AIDP), may be associated with CMV infection in advanced HIV [15,16].

The classic presentation is a symmetric acute motor weakness in more than one extremity, coupled with that in the absence of long tract signs and sensory loss is suggestive of AIDP [17,18].

This is a case of CMV pneumonia with cavitory lesion confirmed by biopsy while another opportunistic infection in the lung especially mycobacterial infection was ruled out. Also, the extrapulmonary involvement of CMV was verified in this patient as positive plasma PCR for CMV and large intestine involvement. With Regard to the appropriate response to ganciclovir, unconfirmed AIDP and negative CMV assay in cerebral fluid, it is suggested that the patient was expired because of immune reconstitution syndrome after HAART administration. Cavitated pulmonary lesion is not common

in HIV patients. Also, CMV pneumonitis with cavitory lesion makes this patient rare case of CMV infection in HIV positive, immune compromised person.

## Conflict of Interest

The authors declare that they have no competing interests.

## References

- Jain M, Duggal S, Chugh TD. Cytomegalovirus infection in non-immunosuppressed critically ill patients. *J Infect Dev Ctries*. 2011 Aug;5(8):571-579.
- Beam E, Germer JJ, Lahr B, Yao JDC, Limper AH, et al. Cytomegalovirus (CMV) DNA quantification in bronchoalveolar lavage fluid of immunocompromised patients with CMV pneumonia. *Clin Transplant*. 2018 Jan;32(1).
- Bozzette SA, Arcia J, Bartok AE, McGlynn LM, McCutchan JA, et al. Impact of *Pneumocystis carinii* and cytomegalovirus on the course and outcome of atypical pneumonia in advanced human immunodeficiency virus disease. *J Infect Dis*. 1992 Jan;165(1):93-98.
- Miles PR, Baughman R, Linnemann C. Cytomegalovirus in the bronchoalveolar lavage fluid of patients with AIDS. *CHEST Journal*. 1990 May;97(5):1072-1076.
- Drew WL. Cytomegalovirus infection in patients with AIDS. *Journal of Infectious Diseases*. 1988 Aug;158(2):449-456.
- Rodriguez-Barradas MC, Stool E, Musher DM, Gathe J, Goldstein J, et al. Diagnosing and treating cytomegalovirus pneumonia in patients with AIDS. *Clin Infect Dis*. 1996 Jul;23(1):76-81.
- Herry I, Cadranet J, Antoine M, Meharzi J, Michelson S, et al. Cytomegalovirus-induced alveolar hemorrhage in patients with AIDS: a new clinical entity? *Clin Infect Dis*. 1996 Apr;22(4):616-620.
- Salomon N, Gomez T, Perlman DC, Laya L, Eber C, et al. Clinical features and outcomes of HIV-related cytomegalovirus pneumonia. *AIDS*. 1997 Mar;11(3):319-324.
- Meduri GU, Stein DS. Pulmonary manifestations of acquired immunodeficiency syndrome. *Clinical infectious diseases*. 1992 Jan;14(1):98-113.
- Aviram G, Fishman JE, Sagar M. Cavitory lung disease in AIDS: etiologies and correlation with immune status. *AIDS Patient Care STDS*. 2001 Jul;15(7):353-361.
- Afessa B, Green W, Chiao J, Frederick W. Pulmonary Complications of HIV Infection Autopsy Findings. *Chest*. 1998 May;113(5):1225-1229.
- McGuinness G, Scholes JV, Garay SM, Leitman BS, McCauley DI, et al. Cytomegalovirus pneumonitis: spectrum of parenchymal CT findings with pathologic correlation in 21 AIDS patients. *Radiology*. 1994 Aug;192(2):451-459.
- Park S, Jang HJ, Kim YW, Park BS, Kim HK, et al. Cavitory Lung Lesion in a Patient with Systemic Lupus Erythematosus: An Unusual Manifestation of Cytomegalovirus Pneumonia. *J Rheum Dis*. 2015 Dec;22(6):387-390.
- Klatt EC, Shibata D. Cytomegalovirus infection in the acquired immunodeficiency syndrome. Clinical and autopsy findings. *Arch Pathol Lab Med*. 1988 May;112(5):540-544.
- Brannagan III TH, Zhou Y. HIV-associated Guillain-Barré syndrome. *J Neurol Sci*. 2003 Apr;208(1):39-42.
- Parry GJ. Peripheral neuropathies associated with human immunodeficiency virus infection. *Ann Neurol*. 1988;23(S1):S49-S53.
- Wagner JC, Bromberg MB. HIV infection presenting with motor axonal variant of Guillain-Barré Syndrome. *Journal of Clinical Neuromuscular Disease*. 2007;9(2):303-305.
- Kolson D. Neurologic Complications of HIV Infection in the Era of Antiretroviral Therapy. *Top Antivir Med*. 2017 Jul;25(3):97-101.