

A 26 Year-Old Woman with AIDS and Pneumonia

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WHAT IS YOUR DIAGNOSIS?

A 26 year-old woman was referred to our hospital with longer than four months history of fever, non-productive cough, progressive dyspnea and chest pain. The patient had been diagnosed with interstitial lung disease in another hospital three weeks earlier and prescribed prednisolone at a dose of 30 mg once daily along with salmeterol and ipratropium bromide inhalation with no improvement in her status. On admission, patient's body temperature was 38.3°C, blood pressure was 110/70 mmHg, pulse rate was 88 beats/min, respiratory rate was 24/min and percutaneous oxygen saturation was 91% in room air. The patient had diffuse scattered rhonchi on her lung exam. Physical examination otherwise was normal. The patient's white blood cell count was 4,100 cells/mm³ (lymphocytes = 42% and neutrophils =58%) and the HIV ELISA test turned out to be positive and was confirmed by Western Blot assay. Laboratory investigations also revealed a low CD4+ cell count (17 cells/ μl), normal liver function, negative blood culture and three negative AFB sputum smear results. Her chest CT-scan is shown in Figure 1. Fiberoptic bronchoscopy was normal. Transbronchial biopsy is shown in Figure 2.

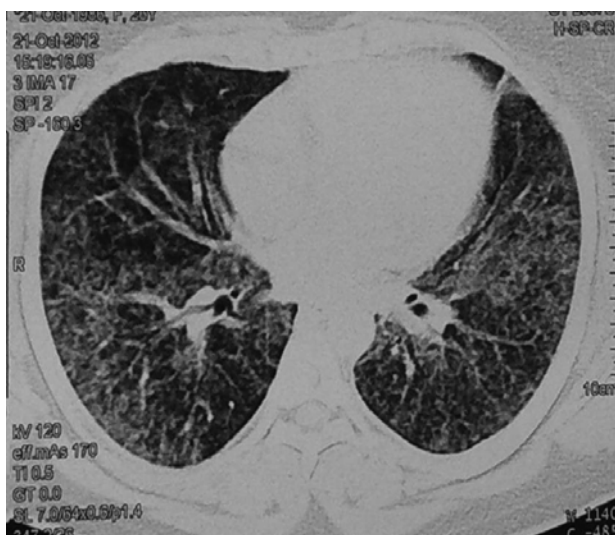


Figure 1. Chest CT-scan of patient.

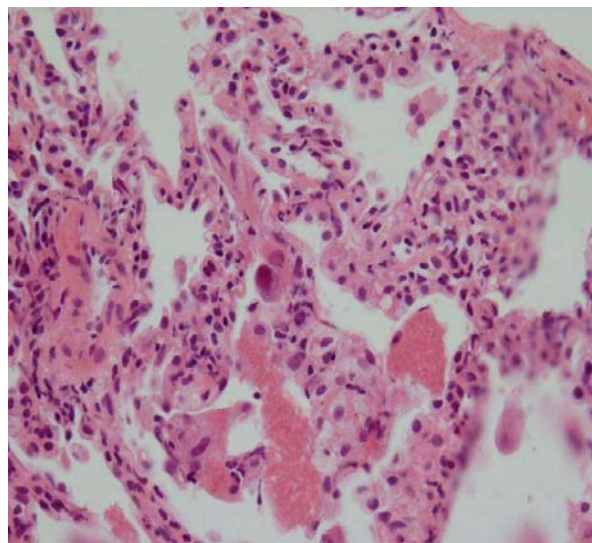


Figure 2. Transbronchial biopsy of patient.

Answer

Diagnosis: Pneumocystis jiroveci and Cytomegalovirus Pneumonia

TBLB revealed alveolated lung parenchyma indicative of interstitial infiltration of chronic inflammatory cells and Masson bodies. Some of lining pneumocytes were large with nuclear inclusions; which showed immunoreactivity by CMV antibody (Figure 3). There was also some intra-alveolar accumulation of eosinophilic fluffy materials; which were positive on immunohistochemistry reaction (IHC) by *P. jiroveci* antibody (Figure 4). No other pathogen including bacteria, mycobacteria or fungi was cultured from the samples obtained from bronchoalveolar lavage (BAL).

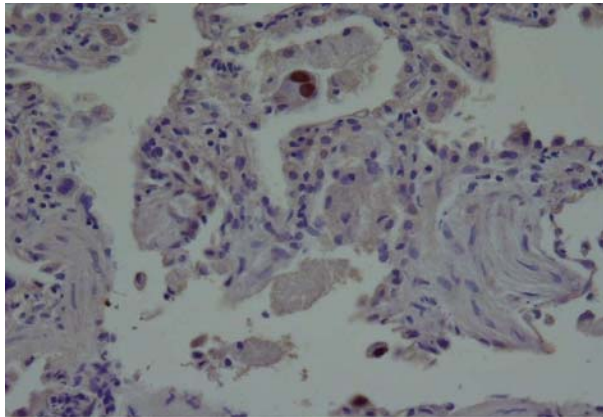


Figure 3. Immunoreactivity by CMV antibody (immunoperoxidase reaction)

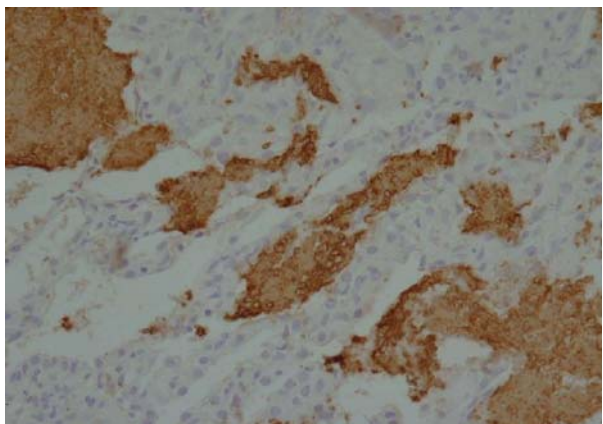


Figure 4. Intra-alveolar fluffy materials with reactivity by *P.jiroveci* antibody (immunoperoxidase reaction)

The patient was diagnosed with CMV and *Pneumocystis jiroveci* pneumonitis. Intravenous ganciclovir was started at a dose of 5 mg/kg every 12 hours for three weeks as well as TMP-SMX at a dose of 15 mg/kg/day (based on the TMP component) in three divided doses for two weeks, along with antiretroviral therapy (zidovudine, lamivudine and efavirenz). The symptoms improved within a month. Chest radiography also showed remarkable improvements. The patient received 900 mg of valganciclovir twice daily for the next three weeks and continued to take valganciclovir 900 mg once daily for maintenance treatment. Currently, she has entirely recovered from pneumonia.

Before the widespread use of chemoprophylaxis, pneumocystis pneumonia was among the major causes of mortality in AIDS. Most cases now occur among unknown HIV-infected patients who are not receiving PCP chemoprophylaxis (1). Common symptoms of pneumocystis pneumonia include the subtle onset of progressive dyspnea, nonproductive cough and low grade fever. Typical radiological features are bilateral perihilar interstitial infiltrates that become increasingly homogeneous and diffuse as the disease progresses. HRCT, which is more sensitive than chest radiography, may reveal extensive ground glass attenuation or cystic lesions.

Such nonspecific symptoms and signs as well as co-infection with other organisms such as CMV in immunocompromised hosts, make the diagnosis of PCP exceedingly difficult. The diagnosis of PCP usually requires microscopical examination of sputum, bronchoalveolar fluid, or lung tissue, because *Pneumocystis jiroveci* cannot be cultured (2).

Although CMV has been detected in 19% to 74% of pulmonary secretions of HIV-positive patients undergoing bronchoscopic examination, this virus is rarely confirmed as the sole pathogen in HIV-infected patients with pneumonia. In fact, the virus may be cultured from BAL fluid specimen of healthy and immunocompromised patients in absence of histological evidence of CMV pneumonia; which is usually needed to establish the definitive diagnosis (3). In the study performed by Lathey and Spector (4), CMV replication increased in corticosteroid-treated macrophages. Hypothetically, the host immune system against CMV may be impaired by corticosteroid therapy; which was received by our patient. CMV is also reported to be a prognostic marker of increased short-term mortality in patients with PCP (4,5).

Acknowledgements

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REFERENCES

1. Lundberg BE, Davidson AJ, Burman WJ. Epidemiology of *Pneumocystis carinii* pneumonia in an era of effective prophylaxis: the relative contribution of non-adherence and drug failure. *AIDS* 2000; 14 (16): 2559- 66.
2. Thomas CF Jr, Limper AH. *Pneumocystis pneumonia*. *N Engl J Med* 2004; 350 (24): 2487- 98.
3. Rodriguez-Barradas MC, Stool E, Musher DM, Gathe J Jr, Goldstein J, Genta RM, et al. Diagnosing and treating cytomegalovirus pneumonia in patients with AIDS. *Clin Infect Dis* 1996; 23 (1): 76- 81.
4. Lathey JL, Spector SA. Unrestricted replication of human cytomegalovirus in hydrocortisone-treated macrophages. *J Virol* 1991; 65 (11): 6371- 5.
5. Benfield TL, Helweg-Larsen J, Bang D, Junge J, Lundgren JD. Prognostic markers of short-term mortality in AIDS-associated *Pneumocystis carinii* pneumonia. *Chest* 2001; 119 (3): 844- 51.