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Case Report

Clinical manifestation and initial treatment on infectious respiratory illnesses in HIV-infected patient: a case report

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ABSTRACT

Respiratory illnesses are common complication during the evolution of the disease in HIV-infected patients, mainly of infectious aetiology. Pneumocystis Pneumonia (PCP) is currently the most frequent cause of pulmonary infections in HIV patients, followed by bacterial pneumonia and TB. In this case report involves a 28 years-old male patient with HIV infection presented to the hospital with progressive dyspnoea, fever, non-productive cough and weight loss. Physical examination showed a decreased of oxygen saturation, oral thrush, and respiratory crackles in both lungs. The results of chest x-ray examination suggested a picture of pneumonia. The sputum was examined with Xpert MTB-RIF Assay and the results were negative. This patient was treated with cotrimoxazole in 2 double-strength (DS) tablets three times daily, dual therapy antibiotics combination with a beta-lactam and macrolide, oral fluconazole, also adjuvant corticosteroid of methylprednisolone. This initial treatment based on drug of choice for infectious respiratory illnesses in HIV-infected patient.

Keywords: HIV, Infectious respiratory illness, Corticosteroid, Antibiotics

INTRODUCTION

HIV infection has become an important global health problem since it was first reported in 1981 at Los Angeles, USA, after there were five homosexual men were diagnosed AIDS with Pneumocystis pneumonia (PCP). Until today, new cases of HIV infection are increasing worldwide. There has been an increase in HIV cases worldwide from 26.2 million in 1999 to 33.3 million in 2009, an increase of 27% in just 10 years.[1]

Respiratory symptoms are common among HIV-infected patients and remains the leading reason for hospitalization.[2] Respiratory illnesses in HIV-infected patients include both infectious and non-infections conditions, which is the main cause of morbidity and mortality. Each of these diseases has a characteristic clinical and radiographic presentation. However, there may be considerable overlap of these conditions during acute illness.[3]

The lungs of individuals infected with HIV are often affected by opportunistic infections. Lower respiratory tract infections are 25-times more common in patients with HIV than in the general community.1 Infection with the fungus Pneumocystis carinii remains a common cause of respiratory disease. Bacterial infections, which occur more frequently in HIV-infected persons than in the general population, and tuberculosis are increasing causes of morbidity and mortality.[4]

Pneumocystis pneumonia (PCP) is caused by Pneumocystis carinii, a ubiquitous fungus. Pneumocystis carinii was a common and rapid cause of death in persons living with AIDS in the early years of the HIV epidemic. It still remains a cause for life threatening opportunistic

infection and a real concern in patients without adequate access to optimal medical care.[3]

Bacterial community-acquired pneumonia (CAP) with typical infectious organisms (*S. pneumoniae, Haemophilus, Pseudomonas, Staph species*, and *Klebsiella*) is the most frequent cause of lower respiratory tract infection in patients with HIV.[2,3] Bacterial pneumonia may be the first manifestation of underlying HIV infection and can occur at any stage of HIV disease and at any CD4 count. Bacterial pneumonia in individuals with HIV results from multiple risk factors, particularly immune defects.[5]

At least one-third of HIV-infected persons worldwide are infected with Mycobacterium tuberculosis, and HIV infection is the largest risk factor for developing TB disease.[1] Pulmonary TB should be suspected in any HIV infected patient presenting with respiratory symptoms, particularly if the patient reports recent weight loss, night sweats or fevers, and contact with others who have been coughing. There is also 4–40% percent of HIV-infected patients with tuberculosis will have extra-pulmonary TB, which may include pleural effusions, pericardial effusions, abdominal TB, and significant lymphadenopathy.[6] The following case report describes clinical symptoms and initial treatment that can be considered on infectious respiratory illness in HIV-patient.

CASE REPORT

In this case report, involves a 28 years-old male patient who come to the emergency room with progressive dyspnoea in the last 1 month before. The progressive dyspnoea gets worse over time, causing the patient to have difficulty to do activities. He also had a non-productive cough, although it was rare, that made him feel chest discomfort at times. In addition, he had a fever that fluctuated since the previous 2 months and there has been a weight loss in the last 3 months of approximately 7 kg. He is a sexually active person, and last had sexual intercourse with his male partner 7 months before he was hospitalized. He was only diagnosed with HIV when he was admitted to the hospital, so he has not yet received Antiretroviral therapy. He never had a history of dyspnoea like this before, or a history of other diseases such as asthma, heart disease, hypertension, diabetes, and others. The smoking habit was also denied by him.

Physical examination showed a blood pressure of 123/80 mmHg, heart rate of 108 beats per minute, respiration rate of 28 times per minute, oxygen saturation of 70% in the room air, and 98% with oxygen 8 liter per minute, and body temperature of 38ºC. In the oral cavity, there is an oral thrush. Examination of the lungs found respiratory crackles in both lung fields. The patient also feels abdominal pain in the epigastric area.

The laboratory examination results were: white blood cells 14.3×103/ µL; haemoglobin level 13.4 g/dl; haematocrit 39.8%; platelet count 478×103/ µL; ratio of Neutrophil/Limfosit: 7.09, SGPT 114 U/L; SGOT 68 U/L; BUN 40 mg/dl; SC 0.8 mg/dl; Na 134 mmol/L; K 4.4 mmol/L; Cl 91 mmol/L. In this patient, the sputum was examined with Xpert MTB-RIF Assay and the results were negative. The results of chest x-ray examination showed paracardial and perihilar infiltrates in both right and left side of lung, which suggested a picture of pneumonia.

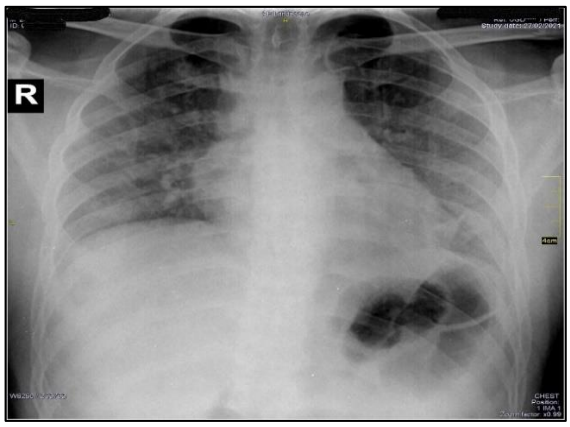

Figure 1: Chest x-ray examination showed paracardial and perihilar infiltrates in both right and left side of lung.

In the hospitalization, patient was treated with; tablet cotrimoxazole 960 mg, given into 3 doses which is: 2 – 2 – 2 tablet, injection of 125 mg methylprednisolone; 2 times/day for 3 days then followed by a dose of 62.5 mg; 2 times/day, injection of meropenem 1 gram; 3 times/day, tablet clindamycin 300 mg; 3 times/day, injection of 40 mg pantoprazole every 12 hours, fluconazole tablet 100 mg; once daily, and administration of paracetamol tablet 500 mg; 3 times/day if patient having a fever.

DISCUSSION

From the first descriptions of HIV/AIDS, the respiratory tract has been the site most frequently affected by the disease and remains the leading reason for hospitalization.[1] As in this case, the first complaint that made the patient come to the hospital was progressive dyspnoea which was getting worse, and the diagnosis of HIV infection was only made after the presence of another history which raised the suspicion of the cause of main complaint in this patient, such as; significant weight loss, prolonged fever, and risky sexual activity. This proves that respiratory complaints are common presenting symptoms in HIV infected patients presenting to health facilities and are often the presenting complaint of patients not yet diagnosed with HIV.[6] The three most common infectious respiratory illnesses in HIV patients are pneumocystis pneumonia (PCP), bacterial community-acquired pneumonia (CAP), and pulmonary tuberculosis. Each of these diseases has a characteristic clinical manifestation and radiographic presentation, despite there may be overlap of these conditions during acute illness.[3]

In HIV patients, the most common manifestations of PCP are subacute onset of progressive dyspnoea, fever, non-productive cough, and chest discomfort that worsens within days to weeks.[3,5] In mild cases, pulmonary examination while the patient is at rest usually is normal. With exertion, tachypnoea, tachycardia, and diffuse dry crackles may be observed. Fever is apparent in most cases and may be the predominant symptom in some patients.[5] Other symptoms include fatigue, chills, chest pain, and weight loss.[5] Patients with pneumonia caused by bacteria such as *S. pneumoniae* or *Haemophilus* species characteristically have acute onset (3–5 days) of symptoms, including fevers, chills, rigors, chest pain or pleurisy, cough productive of purulent sputum, and dyspnoea. The presence of fever, tachycardia, and/or hypotension can be indicators of sepsis. While in patients who are markedly immune suppressed, TB can be a severe systemic disease presenting with classic TB symptoms of high fevers, weight loss, night sweats, accompanied by rapid progression, and features of sepsis.[5,9]

In this case, the patient's complaints are more likely to lead into infectious respiratory diseases characterized by fever and an increase in white blood cells, without a previous history of other diseases, such as asthma, heart disease, hypertension, diabetes, and a history of smoking leading to COPD. In the patient, the most dominant symptoms were progressive dyspnoea, fever, non-productive cough, chest discomfort, and weight loss. On physical examination in the lungs found crackles in both lungs. These are often clinical symptoms that appear in patients with PCP, although it does not rule out some of these symptoms can be found in bacterial pneumonia and pulmonary TB. In addition, from the examination, it was also found that the oral thrush which is a common co-infection in HIV-infected patient with PCP.[5] In one case series by Cano et.al, described five patients who developed PCP, two patients had previous or simultaneous infection by another microorganism (example, a viral upper respiratory tract infection or Mycoplasma pneumoniae). It was hypothesized that of PCP might develop in patients in whose immunocompetence shows a transitory alteration due to a previous or concomitant infection.[15]

The results of chest x-ray examination in this case showed paracardial and perihilar infiltrates in both right and left side of lung, which suggested a picture of pneumonia. The chest radiograph of PCP typically demonstrates diffuse, bilateral, symmetrical "ground-glass" interstitial infiltrates emanating from the hila; however, in patients with early disease, a chest radiograph may be normal.[5,7] Individuals with bacterial pneumonia characteristically exhibit unilateral, focal, segmental, or lobar consolidation on chest radiograph. The frequency of these typical radiographic findings, however, may depend on the underlying bacterial pathogen. Those with pneumonia due to *S. pneumoniae* or *Haemophilus* typically present with consolidation, whereas cavitation may be a feature more suggestive of P. aeruginosa or *S. aureus*.[5,8] While in TB, common chest radiographic manifestations are upper lobe infiltrates with or without cavitation. However, chest radiography is an imperfect screen for pulmonary TB, particularly among patients with advanced immunodeficiency who can have TB culture positive sputum despite normal chest radiographs.[5] In this patient, the sputum was examined with Xpert MTB-RIF Assay and the results were negative.

The initial treatment for respiratory illness in HIV patients is important to prevent worsening of the disease that can lead to serious complications such as hypoxia. If hypoxia is present, denoted by significant resting or ambulatory oxygen desaturation or PaO2 of <70 mmHg on an arterial blood gas (ABG), corticosteroid administration is recommended.[5-7,10-12] Use of corticosteroids as additional anti inflammation therapy in PCP patients serves to reduce lung injury. Two to three days after starting anti-PCP therapy, the respiratory situation of PCP patients often worsens because of increased inflammation in the lungs as a reaction called Jarisch Herxheimer – like reaction, which is a phenomenon immunologic that occurs during antibiotic therapy. Pneumocystis organisms that die from antibiotics, trigger massive phagocytosis by mononuclear cells which results in release and increase of pyrogenic cytokines such as TNF-α, IL-6, and IL 8. Corticosteroids can cause a drop transcription regulation of TNF-α, IL-6, and IL-8.[11] Corticosteroids given in conjunction with anti-PCP therapy may help to better control the inflammatory process. Therefore, the corticosteroid treatment should be started as early as possible but within 72 hours after starting the PCP-specific therapy.[5,12,14] So far, there is no evidence about an optimal dose or duration of adjunctive corticosteroids. The following 21-day oral regimen with prednisone has been recommended: 40 mg orally twice daily for days one to five, 40 mg once daily for days six to 10, and 20 mg once daily for days 11 to 21. If parenteral administration is necessary, it is recommended to use methylprednisolone at 75% of the respective prednisone dose.[5,12,13] Patients with severe hypoxemia can received 240 mg of intravenous methylprednisolone at tapering doses every 3 day for 21 day.[13]

The administration of the antibiotic cotrimoxazole which is a trimethoprim-sulfamethoxazole (TMP-SMX) antibiotic in this case was based on first line prophylaxis and treatment of choice for PCP.[1,5,7,10,13,14] For mild to moderate PCP, the dose of TMP-SMX is TMP 15 – 20 mg/kg/day and SMX 75 – 100 mg/kg/day orally, divided into 3 doses. For most patient, oral doses are 2 double-strength (DS) tablets three times daily. However, for moderate to severe PCP, the dose of TMP-SMX is same but given by intravenous line, can be given orally after clinical improvement.[5,14] Other antibiotics that are given in this patient are meropenem and clindamycin, which are an effort to overcome the possibility of CAP in patients because clinical and chest radiography images have not been able to rule out a differential diagnosis of CAP. In fact, approximately 13% to 18% of patients with documented PCP have another concurrent cause of pulmonary dysfunction, such as bacterial pneumonia or tuberculosis (TB).[5] Meropenem is a type of carbapenem

which is a beta lactam class of antibiotic. However, clindamycin is an erythromycin derivative which is a macrolide class of antibiotics. In one study, the use of dual therapy (usually with a beta-lactam plus a macrolide) was associated with reduced mortality in patients with bacterial pneumonia, including those admitted to the ICU. Empiric antimicrobial therapy should be initiated promptly for patients presenting with clinical and radiographic evidence consistent with bacterial pneumonia.[5,8]

Oral fluconazole is as effective as or superior to topical therapy for oropharyngeal candidiasis. In addition, oral therapy is more convenient than topical therapy and usually better tolerated. Oral fluconazole at 100 mg once a day is considered the drug of choice to treat oropharyngeal candidiasis.[5] Other therapies are given for symptomatically treatment, such as giving pantoprazole to reduce discomfort in the stomach, and paracetamol to treat existing fever symptoms.

CONCLUSION

espiratory tract has been the site most frequently affected by the disease and remains the leading reason for hospitalization in HIV-infected patients. Pneumocystis Pneumonia (PCP) is currently the most frequent cause of pulmonary infections in HIV-infected patients, followed by bacterial pneumonia and TB. Each of these diseases has a characteristic clinical manifestation and radiographic presentation, despite there may be overlap of these conditions during acute illness. The initial treatment for respiratory illness in HIV patients is important to prevent worsening of the disease that can lead to serious complications such as hypoxia. Administration of corticosteroid is recommended if hypoxia is present, with the aim of reducing the inflammatory response that occurs in the disease in order to reduce lung injury. Other specific therapies such as antibiotics are adjusted according to the suspected etiological cause.

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REFERENCES

1. Benito N, Moreno A, Miro J.M, Torres A. Pulmonary infections in HIV-Infected patients: an update in the 21st century. Eur Respir J. 2012;39:730-45.
2. Fitzpatrick M.E, Kunisaki K.M, Morris A. Pulmonary Disease in HIV-Infected Adults in the Era of Antiretroviral Therapy. HHS Public Access AIDS. 2018;28:32(3):277-92.
3. Sarkar P, Rasheed H.F. Clinical review: Respiratory failure in HIV-Infected patients – a changing picture. Critical Care. 2013;17:228.
4. HIV-associated respiratory diseases. Lancelet. 1996.
5. Panel on Opportunistic Infections in Adults and Adolescents with HIV. Guidelines for the prevention and treatment of opportunistic infections in adults and adolescents with HIV: recommendations from the Centers for Disease Control and Prevention, the National Institutes of Health, and the HIV Medicine Association of the Infectious Diseases Society of America. 2019.
6. Chandra A, Firth J, Sheikh A, Patel P. Emergencies related to HIV infection and treatment (part 1). African Journal of Emergency Medicine. 2013;3:142-49.
7. Dichter JR, Lundgren JD, Nielsen TL, Jensen BN, Schattenkerk J, Benfield TL et al. Pneumocystis carinii pneumonia in HIV-infected patients: effect of steroid therapy on surfactant level. Respiratory Medicine. 1999;93:373-78.
8. Franzetti F, Grassini A, Piazza M, Degl'Innocenti M, Bandera A, Gazzola L et al. Nosocomial Bacterial Pneumonia in HIV-Infected Patients: Risk Factors for Adverse Outcome and Implications for Rational Empiric Antibiotic Therapy. Infection. 2006;34:9-16.
9. World Health Organization. Tuberculosis care with TB-HIV co-management: Integrated Management of Adolescent and Adult Illness (IMAI), 2007. https://www.who.int/hiv/pub/imai/TB_HIVModule23.05.07.pdf. Accessed on 17 March 2021.
10. Masur H. Management of Patients with HIV in the Intensive Care Unit. Proc Am Thorac Soc. 2006;3:96-102.
11. Yudhawati R, Wijaksono W. Peran Steroid pada Pneumocystis Pneumonia Ditinjau Berdasarkan Imunopatogenesis. Jurnal Respirasi. 2019;57-64.
12. Ewald H, Raatz H, Boscacci R, Furrer H, Bucher HC, Briel M. Adjunctive corticosteroids for Pneumocystis jiroveci pneumonia in patients with HIV infection. Cochrane Database of Systematic Reviews. 2015;4:CD006150.
13. Azoulay E, Parrot A, Flahault A, Cesari D, Lecomte I, Roux P et al. AIDS-related Pneumocystis carinii Pneumonia in the Era of Adjunctive Steroids; Implication of BAL Neutrophilia. Am J Respir Crit Care Med. 1999;160:493-99.
14. Wilkin A, Feinberd J. Pneumocystis carinii Pneumonia: A Clinical Review. Am Fam Physician. 1999;60(6):1699-708.
15. Ide H, Yamaji Y, Tobino K, Okahisa M, Murakami K, Goto Y et al. Pneumocystis jirovecii pneumonia in an Immunocompetent Japanese Man: A Case Report and Literature Review. Hindawi Case Reports in Pulmonology. 2019.

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