

Use of Fluconazole in Pulmonary Mycosis : A Case Report

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Abstract

Citation : Nalle TL. Use of Fluconazole in Pulmonary Mycosis : A Case Report *Medicinus*. 2018 June; 7(3):94–97.
Keywords : pulmonary mycosis, fluconazole
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Online First : February 2020

The diagnostic criteria for pulmonary mycosis are long-term use of invasive medical devices, long-term use of broad-spectrum antibiotics and corticosteroids, lung infiltrate images with unfavorable fever after adequate antibiotic treatment, an increase in eosinophil count. Should be considered during patients undergoing hospitalization, from the beginning the antifungal that fluconazole can be used. Fluconazole is recommended for candida infections by the FDA because it is safe, fewer side effects and better tolerated than other antifungal classes.

Introduction

Infectious disease is one of the major health problems in Indonesia, including fungal infections or mycoses. Pulmonary mycosis is a pulmonary disorder caused by fungal infection / colonization or a hypersensitive reaction to the fungus. More cases of fungal infections are found, due to increasingly advanced examination techniques. In addition, although no definitive data was found about the increase in the number of patients with pulmonary mycosis, it can be suspected that the number of cases of pulmonary mycosis is increasing due to an increase in acute immunodeficiency syndrome and malignancy. Other predisposing factors are the use of corticosteroid, immunosuppressive, cytostatic drugs. Pulmonary mycosis occurs in two conditions, namely chronic lung disorders and immunocompromised conditions. Lung diseases that are at high risk of causing pulmonary mycosis are malignancy, pulmonary tuberculosis with extensive lung damage such as cavity, asthma, chronic obstructive pulmonary disease (COPD), bronchiectasis, and immunocompromised post-chemotherapy conditions or long-term corticosteroid use.

Acute immunodeficiency syndrome is one of the triggering factors for pulmonary mycosis. Fungal lung disease (lung mycosis) includes systemic mycosis. The most common lung mycoses are aspergillosis, candidosis, cryptococcosis and histoplasmosis. Clinically, the

symptoms of pulmonary mycosis vary greatly, from asymptomatic to severe symptoms that can cause death.

The main symptoms that are often found in the form of cough, chronic cough with phlegm, sometimes shortness of breath, coughing up blood, chest pain, and fever.

On physical examination, pulmonary mycosis is difficult to distinguish from other pulmonary diseases, depending on the anatomic abnormalities that occur in the lung. Investigations to diagnose pulmonary mycoses include radiological examinations, certain clinical laboratory examinations, and mycological examinations. Chest X-ray images of most pulmonary mycoses show no characteristic, interstitial infiltrates, consolidations, multiple nodules, cavities, pleural effusions can be found. A typical picture can be seen in aspergilloma, which is a fungus ball in the cavity on chest X-ray examination. A routine laboratory result that may be related to pulmonary mycosis is an increase in the number of eosinophil cells.^{1,2}

Fluconazole is a fluorinated bis-triazole with new pharmacological properties. This drug is absorbed completely through the digestive tract without being affected by food or gastric acidity. Plasma levels after oral administration are the same as plasma levels after intravenous (IV) administration. This drug is spread evenly into body fluids as well as sputum and saliva. Levels in the spinal fluid 50-90% plasma levels.

Peak levels of 4-8 mcg are reached after 100 mg of administration. The elimination half-life is 25 hours while the excretion through the kidneys exceeds 90% renal clearance. The recommended dose of fluconazole is 100-400 mg per day orally, IV in formulas containing 2 mg / ml.

Gastrointestinal disorders are the most common side effects. In patients with AIDS found urticaria, eosinophils, Steven Johnson syndrome, impaired liver function and thrombocytopenia. Plasma levels of phenytoin and sulfonyleurea will increase in usage with fluconazole, on the contrary there will be a decrease in plasma levels of warfarin and cyclosporine. Fluconazole is useful for preventing relapse of meningitis caused by Cryptococcus in AIDS patients after treatment with amphotericin B. This drug also effective for the treatment of mouth and throat candidiasis in AIDS patients. Fluconazole is indicated for systemic candida fungal infections such as pulmonary mycosis while itraconazole and voriconazole for mucosal candida infections such as candida infections in the oropharynx.^{3,4}

Discussion

Patients Mr. .G, 61 years old, was diagnosed with type II respiratory failure with a history of decreased consciousness. Diagnosis of type II respiratory failure based on the results of Blood Gas Analysis (ABG) found a decrease in levels of paO_2 , an increase in levels of $paCO_2$ and hypokalemia, decreased consciousness was not found again at the first day of follow-up. Patients had previously been treated in the ICU for the past 1 month for 12 days, diagnosed with Nosocomial Pneumonia, Hospital Acquired Pneumonia (HAP) with Systemic Inflammatory Response Syndrome (SIRS) based on history of being treated by ICU, body temperature more than 38.8 degrees Celsius, purulent discharge, leukocytosis, accompanied by severe coughs, fever and rhonchi. SIRS criteria are marked by two or more symptoms, namely body temperature > 38 C or < 36 C, heart rate > 90x / minute, respiratory frequency > 24x / minute, leukocyte count > 12,000 / mm³ or < 4000 / mm³, on patients all SIRS criteria are found. According to the American Thoracic Society (ATS) the initial empiric antibiotic therapy for nosocomial history of smoking, chronic cough and productive sputum, physical examination found shortness of breath with respiration

pneumonia given is betalactam or cephalosporin generation 3 or fluoroquinolone respiration. Therefore patients get levofloxacin which is then on the 7th day combined with meropenem for 5 days because there are indications of a risk factor for Multi Drug Resistant (MDR), the combination is accordance to ATS recommendations. Combination antibiotic therapy according to ATS is cephalosporin or carbapenem or betalactam group plus fluoroquinolone or aminoglycoside group.

Sputum culture results identified Pseudomonas aeruginosa as a pathogenic germ. Sensitivity test results showed resistance to ampicillin, cefasolin, ceftriaxone, gentamycin, ciprofloxacin, levofloxacin, trim-sulfamethoxazole, amikacin and meropenem; sensitive to piperacillin, tazobaktam, cefepime. Results identified by Pseudomonas aeruginosa as a specific pathogenic germ and resistant to levofloxacin and meropenem but sensitive to tazobactam and cefepime. Piperacillin is still combined with resistant antibiotics with levofactin combined with levofactin.

Recurring pulmonary TB is still a differential diagnosis in this patients condition because there are respiratory symptoms such as coughing, tightness plus night sweats, although the BTA sputum examination is negative, but the suspicion is still not completely ruled out.

The presence of fever in the patients indicates that inflammation is taking place in the body, possibly infection. A history of use of Anti-Tuberculosis Drugs which shows that patients have had TB reinforces the likelihood of pulmonary mycosis, because the risk of infection increases if there are lesions in the lungs before. A chest X-ray showing a consolidated in the right lung apex is doubtful, so a CT scan is needed but it is not done. The results of culture fungal test confirmed the diagnosis of pulmonary mycosis due to the uncountable number of candida albicans fungus colonies. Fungal colonies occur on the use of broad-spectrum antibiotic therapy for more than 2 weeks and corticosteroids for 3 weeks. According to the authors the administration of methylprednisolone to patients was suspected of having COPD, suspected COPD based on history taking and physical examination, history taking was a > 20x / minute and crackles. Methylprednisolone to reduce exacerbations in COPD.^{5,6}

According to Indonesian Society of Respiriology (ISR), pulmonary mycosis in patients are similar to those of lung Fever, cough, shortness, etc. need to be aware of as symptoms of pulmonary mycosis in patients with the following conditions:

1. Patients who have immunosuppressed conditions (severe neutropenia, blood malignancy, organ transplantation or chemotherapy)
2. Long-term use of invasive medical devices
3. Patients with immunocompromised conditions due to long-term use of broad-spectrum antibiotics, corticosteroids and immunosuppressed drugs
4. Chronic diseases such as thoracic malignancy, COPD, bronchiectasis, cirrhosis of the liver, renal insufficiency, diabetes
5. Infiltrates in the lungs with fever that does not improve after administration of adequate antibiotics with or without adenopathy
6. Patients with skin mycosis manifestations in the form of erythema nodosum lesions in the lower extremities especially in certain fungal endemic areas
7. Patients are exposed or after traveling to certain fungal endemic areas.

On physical examination, pulmonary mycosis is difficult to distinguish from other pulmonary diseases, depending on the anatomic abnormalities that occur in the lung. Investigations to diagnose pulmonary mycoses include radiological examinations, certain clinical laboratory examinations, and mycological examinations. Chest X-ray images of most pulmonary mycoses show no characteristic, interstitial infiltrates, consolidations, multiple nodules, cavities, pleural effusions can be found. Routine laboratory results that may be associated with pulmonary mycosis are an increase in the number of eosinophil cells. In this patients found several suitable criteria for the diagnosis of pulmonary the lung with fever that does not improve after administration of adequate antibiotics, an increase in the number of eosinophils.

disease in general, there are no pathognomonic.

mycosis, namely the long-term use of invasive medical devices, the long-term use of broad-spectrum antibiotics and corticosteroids, infiltrates in the lungs with fever that does not improve after administration of adequate antibiotics, an increase in the number of eosinophils. Some of the criteria should be taken into consideration while patients is hospitalized, so from the start of antifungal administration, fluconazole can be performed. Fluconazole is recommended for candida infections by the Food and Drug Administration (FDA) because it is safe, has fewer side effects and better tolerated than other antifungal classes. Administration of fluconazole during hospitalization 2 x 400 mg IV is not in accordance with the recommendations that should be 400-600 mg IV / 24 hours. Patients go home after 18 days of hospitalization, the medication for out patient treatment is fluconazole capsule 1 x 150 mg for 3 days and must be controlled 1x / week.

Conclusion

Mr. G, 61 years old, with diagnosis of type II respiratory failure with a history of decreased consciousness, HAP and former TB dd / TB recurrence. Patients had a history of being treated at the ICU in the past month for 12 days each. Empiric antibiotic initial therapy, levofloxacin combined with meropenem, is as recommended. After examination of culture and sensitivity test the antibiotic combination is changed to piperacillin tazobactam and levofloxacin, whereas levofloxacin is resistant to the pathogenic bacteria, it should be replaced with other fluoroquinolone groups such as moxifloxacin. During hospitalization patients is given corticosteroids.

Results of parasitological examination found candida albicans in countless amounts and diagnosed pulmonary mycosis. In addition to the results of the parasitological examination, several suitable criteria were found in patients thus diagnosed lung mycosis, namely long-term use of invasive health equipment, long-term use of broad-spectrum antibiotics and corticosteroids, infiltrates in Some of the criteria should be taken into consideration while patients is hospitalized, so from the start of antifungal

administration, fluconazole can be performed and patients general state can be improved.

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