Study of Drug Utilization within an Anti-fungal Therapy for HIV/AIDS Patients Presenting Oral Candidiasis at UPIPI RSUD, Dr. Soetomo Hospital, Surabaya

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Abstract

Acquired Immunodeficiency Syndrome (AIDS) constitutes a group of symptoms of disease caused by damage to, or degradation of, the immune system as a result of infection with the Human Immunodeficiency Virus (HIV). The most common pathogen during the course of HIV-related disease progression is that of an Oral Fungal Infection (OFI), such as Oral Candidiasis (OC). AIDS may place an infected individual at risk from a variety of opportunistic infections caused by the high prevalence of drug use that increases the risk of Drug-Related Problems (DRPs).

To investigate aspects of drug utilization, including: type of antifungal, dosage regimens, methods of administration and potential DRPs among HIV/AIDS patients suffering from OC in the Unit Perawatan Intermediet Penyakit Infeksi (UPIPI) RSUD, Dr. Soetomo Hospital, Surabaya.

Observational descriptive research featuring a combination of cross-sectional and total sampling methods. The samples consisted of 88 HIV/AIDS patients treated at UPIPI Dr. Soetomo General Hospital, Surabaya from July to August, 2014. The diagnosis of OC was based on clinical appearance, mycology examination and the history of antifungal therapy contained in patients' medical records.

Of 68 cases of OC only 28 patients (41,18%) had undergone treatment. The majority (92.86%) were administered Nystatin, a topical antifungal drug, while only 18 cases (69.23%) received an appropriate dose (4 dd gtt V) in accordance with hospital guidelines. The most potent side-effect of the antifungal drug was that of nausea (53.57%).

Certain DRPs, such as inappropriate dosages and indication, were identified in this study. Nausea represented the most probable side-effect of antifungal therapy.

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Introduction

The etiology of Acquired Immunodeficiency Syndrome (AIDS) constitutes the symptoms of a disease known as Human Immunodeficiency Virus (HIV). HIV is characterized by numerous opportunistic infections which result in an impaired, weakened and depleted immune system. HIV belongs to the family of human retroviruses and, more specifically, the sub-family of lentivirus.[1] The prevalence of HIV/AIDS worldwide has been increasing annually over the past few years, while the disease has been endangering human health for the last two decades. Between 1987 and 2014, the reported cases of HIV and AIDS totaled 150.296, with the numbers of fatalities due to the two conditions being 55.799 and 9.796 respectively.[2] In 2014, Indonesia represented the third highest ranked country within the Asia-Pacific Region and highest ranked in South East Asia with regard to the prevalence of HIV/AIDS cases. The rate of new

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HIV infections in the country increased by more than 25% from 2001 to 2011.[4] East Java constituted the province with the second highest level of HIV infection in 2014 with 19.249 cases, while AIDS cases in the same year amounted to 8,976 .[5]

The high prevalence of, and mortality rate resulting from, HIV/AIDS led to a revolution in the care of patients afflicted with either of these diseases. An appropriate treatment strategy is urgently required to address any problems resulting from opportunistic HIV/AIDS-related infection.[6]

About 90% HIV/AIDS patient presented at least one oral manifestation. Oral manifestations strongly related to HIV/AIDS infection such as Oral Candidiasis (OC), Oral Hairy Leukoplakia (OHL), Linear Gingival Erythema (LGE) as pathognomonic lesion.[7] The most common pathogen during the course of HIV/AIDS disease progression is Oral Fungal Infection (OFI), such as OC.[8] It has been estimated that 75% of HIV/AIDS patients will present with OC as an opportunistic infection.[9,10]

Previous study conducted by Nugraha et al. (2017) indicate a relationship between LGE and colonization of Candida species that can be conclude that LGE is another variant type form candidiasis in HIV/AIDS patients. There were 7 HIV/AIDS Patient with LGE cases (7.95%) associated with positive candida infection.[11]

Ever since the introduction of highly active antiretroviraltherapy (HAART) in the mid-1990s, the incidence and mortality rate related to opportunistic infections that occurred due to the low immune system has been dramatically decreased.[12] HIV/AIDS may place the infected person at risk from a variety of opportunistic infections resulting in the high prevalence of drug use, for example antifungal therapy, that increases the risk of Drug-Related Problems (DRPs).[13] The purpose of this study is to describe drug utilization by investigating the type of antifungal used in treating OC, indication**,** dosage regimens and the resulting susceptibility to DRPs in HIV/AIDS patients with OC at UPIPI RSUD Dr. Soetomo Hospital Surabaya.

Materials and methods

This study has received approval as expressed in a human subject ethical clearance letter from the Ethics Research Committee of RSUD Dr. Soetomo 301/Panke.KKE/VI/2014. This is a descriptive, observational piece of research utilizing cross-sectional and total sampling methods. The sample consisted of 88 HIV/AIDS patients treated at UPIPI Dr. Soetomo Hospital between July and August 2014 who agreed to participate in accordance with the stipulated criteria by completing the necessary consent form. The diagnosis of OC was based on clinical appearance and mycology examination. Antifungal therapy history was obtained from individual patients' respective medical records.

Results

Oral Candidiasis	Total
Treated	28 (41.18%)
Untreated	40 (58.82%)
Total	68 (100%)

Table 1. Oral Candidiasis cases have been treated/untreated.

Antifungal Therapy	Total
Nystatin	26 (92.86%)
Fluconazole	2 (7.14%)
Total	28 (100%)

Table 2. Antifungal therapy received by patients.

Dosage	Total	Suitability
4 dd gtt V	4 (15.38%)	Suitable
4 dd gtt 1 cc	18 (69.23%)	No
4 dd gtt I	2 (7.69%)	No
3 dd gtt III	1 (3.85%)	No
3 dd gtt II	1 (3.85%)	No
Total	26 (100%)	

Table 3. Nystatin dose given to patients.

Dosage	Total	Suitability
1x150 mg	2 (7.14%)	Suitable

Table 4. Fluconazole dose given to patients.

Antifungal	Side-Effect	Suitability
Nystatin	Nausea	15 (53.57%)
	Vomitting	11 (39.29%)
	Stomach ache	1 (3.57%)
Fluconazole	Diarrhea	1 (3.57%)
Total		28 (100%)

Table 5. Potential side-effect of antifungal drug.

In this study, there were 68 HIV/AIDS patients who presented OC (77.27%). Most OC cases were left untreated (Table 1). Nystatin was most often prescribed as an antifungal therapy in the treatment of OC (Table 2). While the dosage of nystatin was inappropriate (Table 3), the

dosage of fluconazole administered in accordance with the guidelines proved appropriate (Table 4). The most common side-effect of the antifungal drug was one of nausea (Table 5).

Discussion

The appropriate use of antifungal treatment within clinical practice, in compliance with and based on clear guidelines, constitutes the emergent focus of this study. Most investigations into anti-fungal therapy have focused on the treatment of candidaemia.[14] In addition, other studies have evaluated the management of anti-fungal drugs, but few studies of anti-fungal therapy have been conducted.[15]

The application of anti-fungal therapy to UPIPI RSUD Dr. Soetomo General Hospital patients showed that 78.57% of the prescriptions were inappropriate. Most fungal infections can be treated with anti-fungal topical therapy alone. However, in an attempt to increase the cure rate, topical and systemic (oral) medications are often combined.[16]

HIV/AIDS patients often suffer from OC, one form of Opportunistic Fungal Infection (OFI) during the course of HIV/AIDS infection.[17] OC must be treated immediately in order to prevent its leading to candidaemia.[18] In this study, it was shown that some cases of oral candidiasis went untreated. Studies of drug utilization as part of antifungal therapy involving HIV/AIDS patients is crucial to minimizing the risk of DRPs.

In the present study, the most commonly prescribed topical antifungal therapy was Nystatin. Anti-fungal topical therapy with fungicidal allylamine is associated with slightly higher cure rates and shorter courses of treatment than fungistatic therapy. However, this therapeutic advantage is offset by its significantly higher cost. The disadvantage of Nystatin as a topical antifungal therapy is not optimal for systemic broad spectrum fungal infection and is accompanied by certain DRPs, including nausea and vomit.[13,14]

Fluconazole was the most commonly prescribed systemic oral antifungal drug featured in this study. A previous investigation conducted in Nepal confirmed fluconazole to be the most commonly prescribed oral antifungal treatment because of its cost-effectiveness and lower propensity to produce adverse effects. Several studies also showed that the most common oral antifungal agent, due to its availability in the hospital pharmacy, was fluconazole which represented the most widely systemic antifungal agent for OC. The advantages of fluconazole include: fewer DRPs and enhanced gastrointestinal tolerance. However, intestinal pain and diarrhea feature prominently among its side-effects.[15,16]

A high incidence of inappropriate prescribing of antifungal therapy was detected in the study reported here. The most common errors occurred with respect to dosage, a common mistake being that of prescribing an inadequate dose of nystatin, even though failure to achieve pharmacodynamics targets for nystatin has been associated with less satisfactory outcomes, the increased risk of side-effects and non-optimal therapies.

Conclusions

Certain DRPs, such as inappropriate dosage and indication, were identified in this study. Nausea represented the most probable side-effect of antifungal therapy.

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Declaration of Interest

The authors report no conflict of interest

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