

# Oral candidiasis as clinical manifestation of HIV/AIDS infection in Airlangga University hospital patients

A Putranti<sup>1\*</sup>, T P Asmarawati<sup>1,2</sup>, B E Rachman<sup>2</sup>, U Hadi<sup>2</sup> and Nasronudin<sup>2,3</sup>

<sup>1</sup>Airlangga University Hospital, Kampus C Mulyorejo, Surabaya, East Java, Indonesia

<sup>2</sup>Tropical and Infectious Diseases Division, Department of Internal Medicine, Faculty of Medicine, Dr. Soetomo General Hospital, Jl. Mayjen Prof dr Moestopo 6-8, Surabaya 60131, Indonesia

<sup>3</sup>Director of Airlangga University Hospital, Kampus C Mulyorejo, Surabaya, East Java, Indonesia

\*Corresponding author: adityarani.putranti@gmail.com

**Abstract.** The purpose of this study was to determine the characteristics of HIV/AIDS patients with oral candidiasis as its clinical manifestation at Airlangga University Hospital Surabaya. This is a descriptive analytic research with cross-sectional design using Chi-Square statistic test. Samples of this study consist of 34 patients using total sampling methods. Those patients were all HIV/AIDS infected patients with oral candidiasis clinical manifestations, who were admitted to Airlangga University Hospital Surabaya from January 2016 to September 2017. Results showed that mostly HIV/AIDS patients with oral candidiasis are male (79.4%), old age (40-75 years) total amounted to 58.8%, heterosexual as main risk factor (70%), clinical stadium mostly in stage IV (61.8%), 26% of patients with chronic diarrhea and 56% with pulmonary TB, clinical stages of patients have a significant relation to the incidence of oral candidiasis infection ( $p=0.024$ ). The most common oral lesions found in people with HIV are Candidiasis. The best management is through routine dental examination and dental precautions to maintain health and achieve a better quality of life.

## 1. Introduction

Acquired Immune Deficiency Syndrome (AIDS) is a collection of symptoms or diseases caused by decreased immunity due to infection of Human Immunodeficiency Virus (HIV), AIDS as the final stage of HIV 1 infection<sup>1</sup>. Oral candidiasis is an opportunistic infection that is often found in people infected with HIV or AIDS characterized by a decrease in CD4+ count. East Java Province with new cases of 1110 in 2016 ranks second after Central Java Province, while for the cumulative number of HIV/AIDS patients from 1987-2016 amounted to 16,911. Based on these data, East Java Province ranks first as the biggest contributor of AIDS cases in Indonesia<sup>2</sup>. The high level of severity and death of AIDS sufferers caused by various factors, one of which is the improper management of patients, including delayed diagnostic of opportunistic infections in people with AIDS. The World Health Organization reports that the proportion of opportunistic infections in different countries varies. Data from the Ministry of Health of the Republic of Indonesia (2007) shows the largest proportion of opportunistic infections in AIDS patients in Indonesia are Oral Candidiasis (80.8%), Tuberculosis (40.1%), Cytomegalovirus (28.8%), Toxoplasma Encefalitis (1.2%), PCP (13.4%), Herpes Simplex



(9.6%), *Mycobacterium Avium Complex* (4%), *Cryptosporidiosis* (2%) and *Lung Histoplasmosis* (2%).

Oral health is an important component in assessing the overall health status of people with AIDS. The role of the dentist in helping to diagnose AIDS is very important, since oral manifestations can be an early sign of HIV infection as in many other systemic diseases. One thing which can be an indicator of HIV infection and prediction of progression to AIDS infection is fungal infections as it relates to the level of immunosuppression. In a preliminary study reported that HIV patients with oral candidiasis had 2.5 times more progressive risk to AIDS than HIV patients without oral candidiasis. The most common oral AIDS-related lesions found are oral candidiasis. Oral candidiasis is caused by the growth of *Candida* fungus. The role of dentists in issues related to AIDS is very important because dentists are also required can recognize the presence of HIV infection, various signs and effects on the oral cavity, such as the occurrence of oral candidiasis which is an opportunistic infection of AIDS. Based on that background, this study discusses the distribution of oral candidiasis in HIV/AIDS infected patients at Airlangga University Hospital Surabaya.

## 2. Material and Methods

The type of this study was descriptive analytics research using secondary data taken from the patient's medical records to see the description of the patients with HIV/AIDS at Airlangga University Hospital Surabaya according to sex type, age, risk factors, clinical stage, chronic diarrhea, pulmonary TB. The data retrieval period was from January 2016 to September 2017. This study discussed several issues related to oral clinical manifestations of oral candidiasis in people with HIV/AIDS in terms of sex, age, risk factors, clinical stage, chronic diarrhea, pulmonary TB. Chi-square test used to examine the effect of patient characteristic with HIV/AIDS infection with oral candidiasis. Result showing significant values ( $p$ ) less than alpha (0.05) are considered significant or indicate a relation<sup>3</sup>.

## 3. Results

The number of samples in this study was 34 patients infected with HIV/AIDS with oral candidiasis as a clinical manifestation of the infection. Characteristics of patients in this study included sex type, age, risk factors, and clinical stage, whereas co-infected infections other than oral candidiasis described in this study were chronic diarrhea and pulmonary TB. Based on table 1, it can be seen that the distribution of HIV/AIDS patients with oral candidiasis as its clinical manifestation is more in male sex (79,4%) compared to female sex which is proportion equal to 20,6%. Based on the results of this study obtained data that of 34 medical record data of HIV/AIDS patients with oral candidiasis as clinical manifestations in the Airlangga University Hospital Surabaya, the largest respondents were old (40-75years) with total amounted to 58,8%.

Viewed from the mode of transmission in cases of HIV/AIDS with oral candidiasis, seen that the highest risk factors are heterosexual (70%), then the use of IDU (18%), homosexual 9% and followed by blood transfusion (3%) as risk factors. Based on table 1, it also can be seen that the distribution of HIV/AIDS infected patients with oral candidiasis is at the most end of the stage (IV) i.e. 61.8%, followed by the stage III of 32.4% and the stage II at 5.9%.

Table 1 shows the percentage characteristics of HIV/AIDS patients with oral candidiasis, followed by an inferential analysis that examined the relation of patient characteristics to the occurrence of oral candidiasis. Chi-square test showed that the clinical stage of patients has a significant influence on the occurrence of oral candidiasis infection ( $p=0.024$ ).

**Table 1.** Characteristics of patients infected with HIV/AIDS with oral candidiasis.

Characteristics	Frequency	Percentage	P
<b>Sex Type</b>			
Male	27	79.4	0.275
Female	7	20.6	0.275
<b>Age</b>			

0-39 Years	14	41.2	0.329
40-75 Years	20	58.8	0.329
<b>Risk Factors</b>			
Homosexual	3	9.00	0.651
Heterosexual	24	70.00	0.651
IDU	6	18.00	0.651
Blood transfusion	1	3.00	0.651
<b>Clinical Stage</b>			
Stage II	2	5.9	<b>0.024</b>
Stage III	11	32.4	<b>0.024</b>
Stage IV	21	61.8	<b>0.024</b>
<b>Total</b>	<b>34</b>	<b>100.00</b>	

Chronic diarrhea as a comorbid infection found in cases of HIV/AIDS infected patients. Based on table 2, it can be seen that as many as 26% of patients infected with HIV/AIDS with oral candidiasis also suffer from chronic diarrhea.

**Table 2.** Distribution of patients infected with HIV/AIDS with oral candidiasis and chronic diarrhea.

<b>Chronic Diarrhea</b>	<b>Frequency</b>	<b>Percentage</b>
Positive	9	26.00
Negative	25	74.00
<b>Total</b>	<b>34</b>	<b>100.00</b>

Pulmonary TB is found to be the most common comorbid infection present in AIDS cases<sup>11</sup>. From table 3, it can be seen that as many as 56% of patients infected with HIV/AIDS with oral candidiasis also suffer from pulmonary TB.

**Table 3.** Distribution of patients infected with HIV/AIDS with oral candidiasis and pulmonary TB.

<b>Pulmonary TB</b>	<b>Frequency</b>	<b>Percentage</b>
Positive	19	56.00
Negative	15	44.00
<b>Total</b>	<b>34</b>	<b>100.00</b>

#### 4. Discussion

Oral candidiasis accounts for more than 90% of HIV/AIDS patients. The infection is an important sign of disease progression towards AIDS. Oral candidiasis is also a preliminary manifestation in the oral cavity that may indicate the progression of HIV infection in approximately 30-80% of patients. *Candida* is a normal flora located in the oral mucosa that will turn into a pathogen when the host's immune system decreases. Candidiasis infection is dominated by *Candida albicans*. Candidiasis is a lesion in the mouth due to HIV infection and is found to be 90% in people with AIDS. Oral candidiasis can affect both men and women and all ages. Odds et al. in his study stated that of 6545 people with HIV/AIDS, 44.8% of them are accompanied by candidiasis<sup>4</sup>.

Based on the results of this study obtained data that of 34 patients infected with HIV/AIDS with oral candidiasis, the highest percentage of patients is male (79.4%) compared to female sex which proportion 20.6% . This is in accordance with research conducted by Saktina et al. at Sanglah Denpasar General Hospital against 179 AIDS patients who stated that the number of male patients (67.6%) more than women (32.4%)<sup>5</sup>. Both of these studies also support the Ministry of Health report in 2013 which states that the proportion of male patients is two times more often than women. More men suffering from HIV/AIDS are assumed because of the large number of men who engage in risky sexual and injecting drug use than women who are more likely to get it from their sexual partners. This is similar to the research conducted by Yusri et al. in his research at RSUP H. Adam Malik Medan which stated that of 163 with sexual intercourse transmission, the highest proportion was male

as many as 119 people (73%)<sup>6</sup>. Meanwhile, there are also differences between men and women in maintaining health. Women usually pay more attention to their health and more often convert themselves than men.

Based on the results of this study obtained data that from 34 data records of HIV/AIDS patients with oral candidiasis at Airlangga University Hospital, the percentage of people with HIV/AIDS with oral candidiasis most are old age group (40-75 years) amounted to 20 people (58.8%) compared with the young age group (0-39 years) amounted to 14 people (41.2%). Results of these two studies are inconsistent with data from Ministry of Health RI (2013) that the cumulative percentage of AIDS in 1987 to June 2013, most in Indonesia in the age group up to 39 years is 63.2%, while in the age group 40 years over by 10%<sup>7</sup>. The range of time since a person infected with HIV to AIDS can take a long time between 5 to 10 years. Kambu (2012) in his study stated that HIV infection occurs more at younger age (12-35 years) because at young age more possible to do unsafe sexual behavior which is at risk to HIV transmission<sup>8</sup>. Unsafe sex behaviors and risks in question such as having sex with a partner without using a condom and taking a trial and error, consuming alcoholic beverages and drug use. Results of this study indicate the proportion of people with HIV/AIDS with oral candidiasis based on risk factors, there is the highest number of patients with heterosexual as the highest risk factor that is as many as 24 people (70%). The results showed that the proportion of HIV/AIDS patients with oral candidiasis based on clinical stage, was highest in patients with end-stage (stage IV) as many as 21 people (61.8%). Chi-square test performed on the characteristics of patients with end oral candidiasis showed that clinical stage has a significance value of 0.024 ( $p < 0.05$ ) which means that the clinical stage of HIV/AIDS patients has a relation to the occurrence of oral candidiasis infection.

Chronic diarrhea as a comorbid infection found in cases of HIV/AIDS infected patients. Based on table 2, it can be seen that as many as 26% of patients infected with HIV/AIDS with oral candidiasis also suffer from chronic diarrhea. Diarrhea in HIV can occur in all clinical stadiums, both in the early and advanced stages. In the early stages of HIV is usually a mild diarrhea, intermittent and can heal itself without treatment. In the advanced stages, along with the immune function of the body decreases, diarrhea becomes chronic, weight loss occurs and malnutrition. The degree of immune suppression in HIV has been associated with an increased risk of chronic or persistent manifestation of diarrhea<sup>9</sup>.

Pulmonary TB is found to be the most common comorbid infection present in AIDS cases<sup>10</sup>. From table 3, it can be seen that as many as 56% of patients infected with HIV/AIDS with oral candidiasis also suffer from pulmonary TB. Pulmonary TB is an infectious disease that has been endemic in Indonesia and Indonesia is the fifth-ranked country with the highest burden of tuberculosis in the world. Co-infection with HIV/AIDS and tuberculosis creates new problems. HIV infection is a risk factor for the development of tuberculosis through mechanisms of reactivation of latent infection, rapid progression of primary infection or re-infection with mycobacterium tuberculosis. Patients infected with HIV/AIDS are 20-37 times more likely to have tuberculosis than people without HIV/AIDS infection<sup>11</sup>. Between pulmonary TB and HIV have a strong relationship because with HIV infection, pulmonary TB cases rise and also increases HIV progression. Factors that affect patient opportunity becoming Pulmonary TB patient are low immune systems, including HIV/AIDS and malnutrition. HIV is the most potent risk factor for people infected with tuberculosis to become ill with TB. If the number of people infected with HIV increases, then the number of TB patients will increase, thus the transmission of TB in the community will increase as well. Co-infection with HIV will increase the risk of TB incidence significantly. Besides, TB is the main cause of death in HIV/AIDS infected patients<sup>11</sup>.

Oral candidiasis is the most common manifestation of opportunistic infections in people with HIV/AIDS.<sup>12</sup> This infection is primarily caused by *Candida albicans*, a dimorphic fungal organism present in the oral cavity in a nonpathogenic state. These organisms have the ability to turn into pathogens with hyphae forms. Conditions that support this transformation include immune dysfunction. Disorders of polymorphonuclear leukocytes lead to systemic susceptibility of infection, whereas disruption of cellular immunity regulated by CD4+ T-cells reduces protection against

mucosal infections. There is a correlation of decreased CD4+ T-cell count with the onset of oral candidiasis as it affects the need for systemic CD4+ T threshold T-cells to protect the oral mucosa and local immunity status. The onset of oral candidiasis is influenced by CD4+ T-cell levels, a decrease of 25% of normal levels can lead to manifestations and affect disease progression<sup>13</sup>. The high proportion of candidiasis is due to this infection being the most prominent and easily recognizable clinical symptom as a sign of the onset of HIV infection<sup>14</sup>. Also, 50% of healthy human mouth cavities carry this fungal as a normal microflora<sup>15</sup>. Treatment of HIV/AIDS infected patients by hospitals themselves such as proper diagnostic approach, prophylactic treatment, opportunistic infection treatment and aggressive antiretroviral drugs contribute to the high rates of opportunistic infections that occur in HIV/AIDS patients<sup>5</sup>.

## 5. Conclusion

Results of this study showed that mostly HIV/AIDS patients with oral candidiasis in Airlangga University hospital are male (79.4%), old age (40-75years) total amounted to 58.8%, heterosexual as main risk factor (70% ), clinical stadium mostly in stage IV (61.8%), 26% of patients with chronic diarrhea and 56% with pulmonary TB, clinical stages of patients have a significant relation to the incidence of oral candidiasis infection ( $p=0.024$ ).

Oral lesions could be the early signs of HIV infection. This study was writing expected to motivate colleagues especially dentists to be able to diagnose HIV/AIDS patients earlier. The dentist should be more precise in early identification of HIV, thereby reducing the progression of the course of the patient's illness. Candida infections are often an early symptom of HIV infection. The presence of oral candidiasis without a local cause in patients with generally healthy looking conditions needs to direct vigilance on other factors that may allow patients to be at risk for HIV infection. The best management is through routine dental and dental precautions to maintain health and achieve a better quality of life. Early detection of HIV infection as well as good management is essential to prolong the life expectancy of patients with HIV/AIDS. Treatment of oral candidiasis depends on type of candidiasis, distribution and severity of the infection. In the next study still needs to do further research to determine the type of candidiasis as well as more sample quantities to strengthen the validity of the study.

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