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Correlation Oral Hairy Leukoplakia and CD4+ Counts in HIV/AIDS Patients at Dr. Soetomo Hospital Surabaya, Indonesia 2014

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Abstract

Indonesia is a one of the countries in South East Asia with a high prevalence of HIV/AIDS cases. Oral Hairy Leukoplakia (OHL) is the one of the oral manifestations that often found in HIV/AIDS patient decreased CD4+ counts. OHL play an important role and it can be used as a clinical biomarker to determine the stage, progression, predict the onset of opportunistic diseases and a strong indicator of immunodeficiency condition.

The aim of this study to investigate correlation OHL and CD4+ counts in HIV/AIDS patients at UPIPI RSUD DR. Soetomo Surabaya 2014.

This study was an analytic observational study with cross-sectional and total sampling method was conductet at UPIPI RSUD Dr. Soetomo. The samples consisted of 88 HIV/AIDS patients from July-August 2014. Diagnosed of OHL based on clinical appearance, the oral cavity of research subjects examined by oral medicine specialist. CD4+ counts obtained from patient's medical record. 88 HIV/AIDS patients were examined; there were 15 patients with OHL (17,05%).

OHL was found to be significantly correlated to decreased of CD4+ counts <200 cells/mm³ ($p < 0.05$). Decreased of CD4+ counts affect the occurrence of OHL. OHL may be used as an alternative to CD4 count to diagnose the immunodeficiency HIV/AIDS patients.

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Introduction

Acquired immunodeficiency syndrome (AIDS) is an infectious disease caused by the Human Immunodeficiency Virus (HIV). The HIV characterized by profound immunosuppression that leads to opportunistic infections.^{1,2}

Number of patients with HIV infection continues to annually increase, infects the entire population in the world and has been became a global health problem. HIV has been endangering human health for more than 20 years. By the end of 2012 it was found about 35.3 millions of people living with HIV/AIDS

worldwide.³ From 1987 to September 2014 found as many as 150.296 people living with HIV and AIDS patients with a mortality rate as much as 55.799 HIV and 9.796 AIDS. East Java Province ranked second highest province with HIV-infected patients with 19.249 patients and 8,976 AIDS patients.⁴ Dr. Soetomo General Hospital, East Java which in charge of handling for the largest referral patients throughout Eastern Indonesia, including referral and handling treatment of HIV/AIDS. Dr. Soetomo has a division that capable to treat HIV/AIDS patient called Unit Perawatan Intermediet Penyakit Infeksi (UPIPI).⁵

It has been estimated that 90% of people with HIV disease will present at least one oral manifestation, sometime during the HIV infection. Dentist has an important role in the primary health care to positively affect the well being of patients. The oral health is an important but frequently undervalued as source of diagnostic and prognostic information in patients with HIV

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diseases.⁶ Oral manifestations is an important biomarkers in HIV infection. OHL is one of seven oral manifestations were strongly associated with HIV/AIDS (pathognomonic lesion). OHL is the second most common lesions that found on HIV / AIDS after oral candidiasis so it can be used as a diagnostic marker for HIV. OHL can be used as a clinical biomarker decreasing levels of Cluster Differentiation 4(CD4⁺) or immunosuppression condition in people with HIV/AIDS.^{7,8}

Research about the prevalence of OHL associated with HIV/AIDS in some regions of the world is important to describe of the epidemic of HIV/ AIDS and can be used as basic research for further research. The aim of this study to investigate correlation OHL and CD4⁺ counts in HIV/AIDS patients at UPIPI RSUD DR. Soetomo Surabaya 2014.

Materials and methods

This study has been received approval ethical clearance letter of human subjects from Ethics Research Committee of RSUD Dr. Soetomo 301/Panke.KKE/VI/2014. This is an analytical observational research with cross-sectional and total sampling method. The samples consisted of 88 HIV/AIDS patients. there were 88 HIV/AIDS treated in UPIPI Dr. Soetomo Hospital from July to August 2014 accordance with the criteria and agreed to participate by filling the informed consent.

Diagnosed of OHL based on clinical appearance, the oral cavity of research subjects examined by oral medicine specialist. CD4⁺ counts, the others data obtained from the patient's medical record. Correlation between OHL and CD4⁺ was determined using Pearson test with p<0.05. Statistical analysis was done using Statistical Package for the Social Sciences (SPSS) 17.0 software for windows 8.1 by SPSS Inc, Chicago, United State.

Results

In this study, there were 15 HIV/ Patient with OHL (17,05%) that can be seen in Table 1. Most of OHL cases can be found 36-45 years old patients group (46,67%) and most of them are male with low category of CD4⁺ counts <200cells/mm³ (86,67%) that can be seen in Table 2. Pearson's Correlation Test, showed that there is a correlation between the OHL with

decrease of CD4⁺ count on a significant level of 0,0378 (p < 0.05).

Lesi	HIV+
OHL +	15 (17,05%)
OHL -	73 (82,95%)
Total	88 (100%)

Table 1. Total Sampling HIV/AIDS patients who suffer OHL in July-Agust 2014 at UPIPI.

Age (year)	CD4 ⁺ < 200 sel/mm ³		CD4 ⁺ 200-500 sel/mm ³		CD4 ⁺ > 500 sel/mm ³		Total
	Male	Female	Male	Female	Male	Female	
16-25	0	0	0	0	0	0	0 (0%)
26-35	3	2	0	1	0	0	6 (40,00%)
36-45	4	3	0	0	0	0	7 (46,67%)
46-55	1	0	0	1	0	0	2 (13,33%)
>55	0	0	0	0	0	0	0 (0%)
Total	8	5	0	2	0	0	15 (100%)
	13 (86,67%)		2 (13,33%)		0 (0%)		

Table 2. Ages, Gender and CD4+ Counts distribution in HIV/AIDS patients who suffer OHL in July-Agust 2014 at UPIPI.

Discussion

HIV is a obligate intracellular retrovirus. Retroviruses have the ability to use the Ribonucleic Acid (RNA) and Deoxyribonucleic Acid (DNA) host to form DNA virus with an incubation period of about 5 to 10 years. HIV was able to cause symptoms of diseases called AIDS.¹ HIV will decrease the immunity of the body significantly and progressively.²

HIV infection affects innate immunity and adaptive immunity. HIV attacks and disrupt homeostasis efforts that so the host susceptible to opportunistic infections. HIV/AIDS infections lead to a variety of clinical manifestations in the various organs such as in the oral cavity. Oral manifestations may indicate systemic conditions of person and reflect an initial clinical signs that can predict the progression of HIV into AIDS.⁹

This research conducted at the Unit UPIPI RSUD Dr Soetomo. This hospital was chosen because RSUD Dr. Soetomo is a referral center in Indonesia, second largest in Eastern

Indonesia. RSUD Dr. Soetomo has been become one of the seven hospitals designated by the Ministry of Health as a Pilot Project of HIV/AIDS service since 2010.^{10,11}

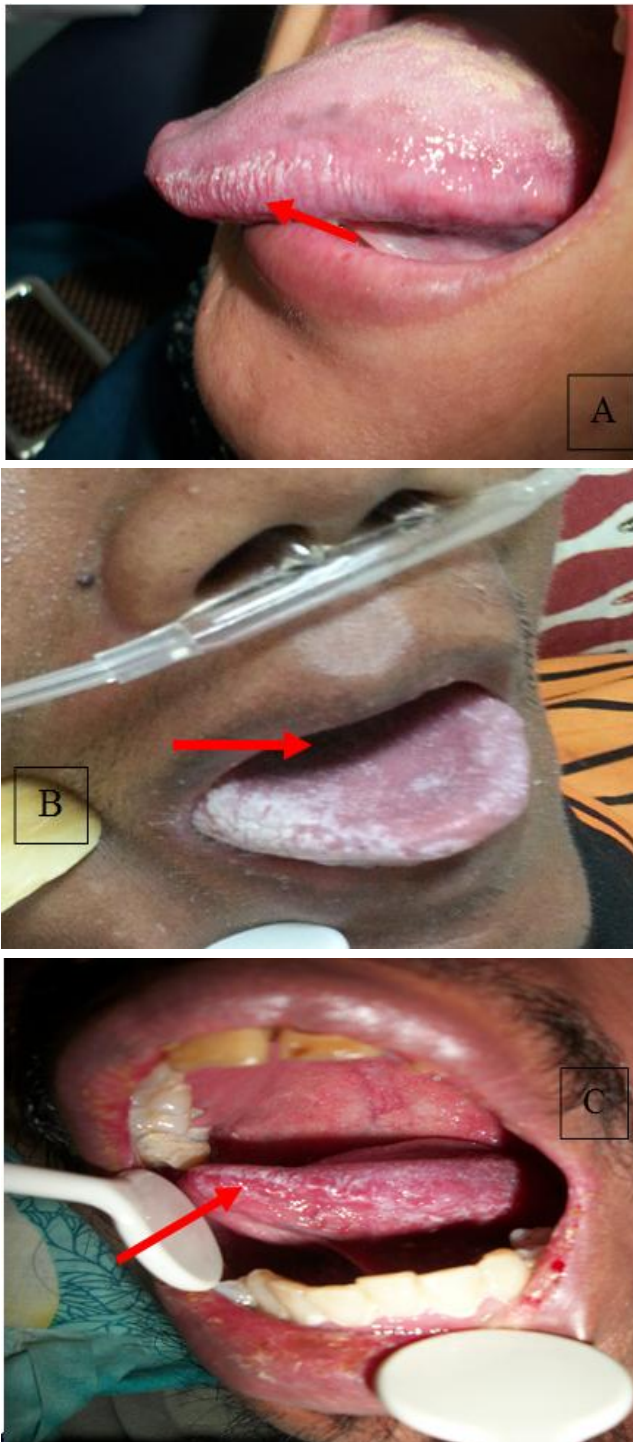


Figure 1. (a) OHL on the lateral (right and left) of tongue; (b) OHL superimposed with Oral Candidiasis on the dorsum and lateral of tongue; (c) OHL on the lateral of tongue with minor aphthous ulcers.

One lesion that have very close relation and often associated with HIV infection is OHL. OHL caused by Epstein Barr Virus (EBV) infection. EBV infects almost 4 billion population (90%) of young adults around the world and often associated with HIV/AIDS. OHL is the second most common lesions that found in HIV/AIDS that can be used as a diagnostic marker for HIV and to predict the decrease level CD4⁺ or immunosuppression condition in HIV/AIDS after Oral Candidiasis (Figure 1). OHL commonly found on the lateral edge of the tongue but also be found on the dorsum and buccal mucosa area. The clinical appearance of OHL is wave-shaped look like with a vertical white line that can not be scraped with an asymptomatic.^{12,13}

Prevalence of OHL in this study are more than research in Persatuan Waria Kota Surabaya (PERWAKOS) that only found 7 cases (15.56%), but less than research in UPIPI dr. Soetomo (2012) with 23 cases (41%).^{14,15}

There are similarities between the number of lesions OHL percentage in low level category of CD4⁺ counts (<200 cells/mm³). The moderate level of CD4⁺ counts is 200 – 500 cells/mm³ and the normal level of CD4⁺ counts is >500 cells/mm³. Increased incidence of OHL is affected by the decrease of CD4⁺ counts. The high levels of CD4⁺ counts will decrease the prevalence of the OHL. Emerging OHL lesions depend on the levels of CD4⁺ counts HIV/AIDS. OHL can be used as a clinical biomarker to predict CD4⁺ counts in HIV/AIDS patients. OHL often arise in HIV/AIDS patient that only have CD4⁺ count < 200 CD4⁺ counts cells / mm³. HIV/AIDS patient with a low immunity that lead EBV infect easily.^{16,17}

EBV infections in HIV/AIDS there are two pathway of EBV infection, lytic infection when viral replication occurs and latent infection when viral DNA settled here in the infected B cells in the blood or epithelium. EBV infects epithelial that has to be settled latently and at a time will be active, but the causes of active EBV virus in infected B cells is still unknown.^{18,19}

In most of cases, the OHL can be diagnosed clinically, biopsy examination is not mandatory. The clinical symptoms of OHL are distinctive and easily recognizable. OHL does not need to be treated because it will disappear if there is an increasing level of CD4⁺ counts (> 500 cells/mm³). The onset of OHL do simultaneously as AIDS progression. The dentist

needs to be aware in taking action to treat patient and always do Universal Precaution (UP). Society needs to be given counseling about the OHL and other oral lesions that associated with HIV/AIDS.

Conclusions

Prevalence of OHL in HIV/AIDS patients at UPIPI Dr. Soetomo Surabaya 2014 as much as 15 cases (17,05%). OHL was found to be significantly correlated to a decreased CD4+ counts <200 cells/mm³. OHL may be used as an alternative to CD4⁺ counts to diagnose the immunodeficiency HIV/AIDS patients.

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Declaration of Interest

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