

Correlations between Age, Gender and Medical History to Colonization of *Candida Albicans* in Cerebrovaskular Accident Patients in Jombang

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Abstract: Cerebrovascular accident (CVA) is a sudden neurologic disorder that occurs due to restriction or cessation of blood flow through the arterial supply system of the brain. CVA causes paralysis, impaired consciousness, difficulty swallowing, and decreased oral hygiene resulting in oral infections. The purpose of this research is to know the description of the amount of colonization of *candida albicans* on CVA clients in RSUD Jombang. The design of this research is descriptive quantitative. The sample in this study were patients treated in stroke room of 40 people, selected by using simple random sampling. The result of this study found that 52.5% of CVA patients were male sex, most (50%) of respondent age was 49-59 years. History of the disease that the patient has 52.5% is hypertension. Most of the 75% is the first CVA attack. The condition of *candida albicans* infection may be related to gender, history of the disease and type of stroke.

1 INTRODUCTION

Cerebrovascular accident (CVA) is a sudden neurologic disorder that occurs due to restriction or cessation of blood flow through the arterial supply system of the brain (Price & Wilson, 2006). The effects of stroke can cause paralysis, paralysis, loss of facial sensation, speech impediment, difficulty swallowing, impaired consciousness and decreased oral hygiene quality (Lam, 2007).

Indonesia is the country with the largest number of stroke sufferers in Asia (Yoshida, 2009). The number of stroke patients in East Java is ranked fourth in Indonesia (RISKESDAS, 2013).

One aspect of the fulfillment of basic human needs according to Henderson nursing theory is self-care in the form of oral hygiene or oral hygiene (Brady, 2011). Self-care deficit of oral hygiene can cause an effect on stroke patients that is the emergence of various problems of *Candida Albicans* microorganisms, dental plaque and dental caries, even pneumonia. In the oral cavity and saliva appears various pathogens such as bacteria, fungi and viruses. Such pathogens can cause infection and

increase the risk of secondary infection if no oral hygiene treatment is done properly (Bethesda, M. D., 2015). Clinical evidence suggests a link between aspiration of pneumonia and oral health conditions: caries, periodontal disease, and poor hygiene (Dai, 2015).

Oral hygiene needs to be done to reduce the risk of secondary hospital infections as well as to prevent oral health problems (Kim et al., 2014). Knowing that the increasing importance of oral hygiene relationship of pasien stroke and the number of *candida albicans* appear, this study aims to give a picture of stroke patients and the amount of *candida albicans* that appears.

2 METHODS

The design of this research is quantitative descriptive that aims to know the description of the number of colonization *candida albicans*. The sample of the study was CVA patients in High Care Unit chambers of 40 people. Inclusion criteria in this study, stroke clients, clients with dysphagia, clients with age 45-70, and no oral infections. Exclusion

criteria in this study, the clients are restless or uncooperative, clients with consciousness decline, and clients using oral appliance. The sampling technique used to take the sample is simple random sampling.

3 RESULT

3.1 Characteristics of Respondents

3.1.1 Age

The following table describes the age description of respondents.

Table 1: Description of Age in High Care Unit Room On January 22 - February 13, 2018.

Characteristics	Mean	SD	Minimum-maximum
age	54,30	9,8992	38-70

The average age of respondents is 54.30 years, with a minimum age of 38 years and a maximum age of 70 years.

3.1.2 Gender

The following table describes the gender description of respondents

Table 2: Gender description in High Care Unit Room On January 22 - February 13, 2018.

Characteristics	Frequency (people)	Percentage (%)
Gender		
Man	21	52,5
Woman	15	47,2
Total	40	100

Respondents' gender was almost equal between 52.5% and 47.5%, respectively

3.1.3 Disease History

The following table describes the description of disease history of respondents:

Most of respondent's disease history were hypertension (52,5%), diabetes 15%, cholesterol 5%, 5% gout, CHD 5% and no history 17,5%. This may

Table 3: Description of disease history of respondents in High Care Unit Room On January 22 - February 13, 2018.

Characteristics	Frequency (people)	Percentage (%)
a. Hypertension	21	52,5
b. Diabetes	6	15
c. Cholesterol	2	5
d. Gout	2	5
e. CHD	2	5
f. There is no	7	17,5
Total	40	100

increase CVA risk and aggravate the CVA condition causing *candida albicans* infections.

3.1.4 CVA Attack History

The following table describes the CVA attack history description, which is:

Table 4: Description of CVA attack history in High Care Unit Room On January 22 - February 13, 2018.

Characteristics	Frequency (people)	Percentage (%)
Attack I	30	75
Attack II	10	25
Total	40	100

Most respondents were the first CVA attack (75%)

3.2 Candida Albicans

The following table describes the description of the number of colonization of *candida albicans*;

Table 5: Description of the number of colonization of *candida albicans* in High Care Unit Room On January 22 - February 13, 2018.

Variable	N	mean	SD	Min-max
the number of colonization of <i>candida albicans</i>	40	39,02	11,883	13-59

explains that the risk factor for stroke patients is age in the final adult phase until the elderly are 45-65 years old.

The results also obtained data that as much (52.5%) of respondents have male gender. The description is in line with the Hidayah and Maryatun (2013) study which also obtained data that male sex has a higher risk of stroke than women. Based on the results of the study explained that the sex of men associated with the occurrence of mouth infections in the form of *candida albicans* due to smoking habits, drinking coffee and oral hygiene.

The results obtained data that history of the disease can cause stroke and exacerbate the condition of stroke. The history of most diseases is hypertension, then diabetes, cholesterol, and heart disease. It is in harmony with PERDOSSI, (2013), states that the most risk factors for stroke is hypertension, followed by diabetes, cholesterol and heart disease.

A history of disease in stroke patients can also increase the occurrence of *candida albicans* infection conditions such as diabetes and hypertension. Predisposing factors play a role in facilitating invasion of *candida albicans* into human tissue because of changes in oral flora balance or changes in local and systemic defense mechanisms. Blastospores develop into a false hyphae and the pressure from the false hyphae destroys the tissues, so invasion into the tissues can occur. Virulence is determined by the ability of the fungus to damage tissue and invasion into the tissues

The results also obtained data that a history of stroke can cause *candida albicans* in the mouth. In line with research conducted by J. Ory et al (2016), explains that stroke patients with various attacks can cause the appearance of *candida albicans* caused by various factors. In the first stroke attack can cause infection because it is a condition of the first basic needs limitations for patients and patients are unable to perform oral hygiene. In the second attack resulted in a more severe stroke so that the appearance of candida getting bigger.

The results also suggest that in stroke patients can appear *candida albicans* with a mean value of 39.02 with min-max value of 13-59. This is in accordance with research J. Ory et al (2016), explaining that in stroke patients can appear *candida albicans* in the oral cavity. *Candida albicans* are found in the areas of the cheek mucosa, tongue, saliva and soft palate.

Candida albicans has the character of penetrating the mucosal epithelial cell area. Oral

cavity is one type of mucosal epithelial cells so that *candida albicans* is easy to develop.

The number of colonies may vary by patient. This difference can be caused by several factors, among influencing factors is the condition of saliva. Saliva has a variety of components that serve to defend the body against infection of microorganisms, among which are various proteins such as lysozyme, bactericidal / permeability increasing protein (BPI), peroxidase, IgA and IgG are different concentrations in each individual. Saliva acidity (pH) also affects the amount of candida, acidic saliva (low pH) will increase the amount of *candida albicans*

5 CONCLUSION

Stroke patients can occur equally among women and men from the 38-70 year age range. In stroke patients with limited mobility, decreased awareness, previous history of the disease and a history of stroke may exacerbate the condition of the stroke resulting in higher levels of relief. The degree of dependence and limitations on the fulfillment of these needs led to the emergence of colonization of *candida albicans* in the oral cavity. *Candida albicans* appears in all stroke patients with varying amounts due to different pH conditions of the patient's oral cavity.

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