



Identification of *Candida sp.* On The Oral Mucose of Toddlers at Jenggot Village Posyandu, Pekalongan City

Syafiq Naqsyabandi^{1,a)}, Tuti Suparyati², and Suparyati³

¹Akademi Analisis Kesehatan Pekalongan,
Jl Ade Irma Suryani No 06 Dadirejo Tirto Pekalongan 51151 Central Java Indonesia

²Akademi Analisis Kesehatan Pekalongan,
Jl Ade Irma Suryani No 06 Dadirejo Tirto Pekalongan 51151 Central Java Indonesia

³Akademi Analisis Kesehatan Pekalongan,
Jl Ade Irma Suryani No 06 Dadirejo Tirto Pekalongan 51151 Central Java Indonesia

^{a)}Corresponding author: snlaziale@gmail.com

Abstract. Toddlers are children aged between 1-3 years, which is an important period in child development. Therefore, parents need to pay attention to the nutritional status of toddlers. Nutritious food can make a good and healthy growth and development for toddlers and the body is not susceptible to fungus infection, for example *Candida sp.* This study aims to identify the presence of *Candida sp.* on the oral mucosa of toddlers in Jenggot Village Posyandu, Pekalongan City. The type of research used is descriptive research, namely research used to obtain an overview of the fungus *Candida sp.* on the oral mucosa of toddlers in the Jenggot Village Posyandu, Pekalongan City. The results of the examination showed that microscopically there were 20 (86.9%) positive samples consisting of the presence of budding yeast cell and pseudohyphae in 4 (17.3%) samples, the presence of budding yeast cell only in 16 (69.6%) samples, and 3 (13.1%) samples were negative. Parents rarely pay attention to cleanliness and oral health in toddlers, toddlers rarely brush their teeth so that many toddlers have dental caries. This results in factors that support the growth of microorganisms and *Candida sp.* in the toddler's oral cavity. It can be concluded that there is *Candida sp.* on the oral mucosa of toddlers at Jenggot Village Posyandu, Pekalongan City as much as 86.9% percent of the sample.

Keywords : Toddlers, Oral Mucose, *Candida sp.*

INTRODUCTION

Mucocutaneous candidiasis is a fungal disease caused by *Candida sp.*, which is *Candida albicans* involves the skin, oral and vaginal mucosa. In chronic conditions, this disease is often associated with a deficiency of T-lymphocyte cells. This disease does not occur due to hereditary factors, but in individuals with impaired immune systems.⁽¹⁾ This disease can be found throughout the world and can attack all types of age, both male or female. From several cases that have occurred, it is reported that *Candida albicans* is present in approximately 45-65% of the oral cavity of healthy children.⁽²⁾



Candida sp. are microorganisms that live with the oral microbial flora in a state of balance. If there is a disturbance in the balance between *Candida sp.* with other oral microbial parts, these organisms can grow, form colonies invading tissues and produce opportunistic infections. Opportunistic infections are infections caused by organisms that usually do not cause disease in individuals with normal immune systems, but can attack individuals with poor immune systems.⁽¹⁾ This toddler's immune system that has not been fully formed causes that if *Candida sp.* infects a toddler's body, these organisms can change from budding yeast cells to hyphae. Changes in the form of parasitic fungi move through the digestive tract by destroying the barrier between the intestinal tract and the overall circulation in the body.⁽³⁾ In the toddler body, *Candida sp.* can infect the respiratory, digestive tract, skin and mucocutaneous areas.⁽⁴⁾ Symptoms on the toddler's mucosa are white spots in the mouth and tongue that are confluent and attached to the oral mucosa and pharynx.⁽³⁾

Toddlers are 1-3 years old children which are an important period in the children development. During this period basic growth and development can affect the child's growth in the next period, where during this period the child's physical growth is relatively slower than in infancy but his motoric development goes faster. At this time toddlers often experience a decrease in appetite and behave in refusal to do anything that will be done to them, for example refusing food that has been provided by their parents and choosing the food they like themselves so that the child's body looks slim and muscular. Based on this, parents need to pay attention to the nutritional status of children.⁽⁵⁾ Nutritional status can be calculated based on age, weight and height. Factors that can influence nutritional status are gender, place of residence, education and economic status.⁽⁶⁾ Nutritious food can promote normal or healthy growth and development of toddlers, the body is not susceptible to infection, for example *Candida sp.* infection.⁽⁷⁾ Oral and systemic health is conditioned by proper nutrition.⁽⁸⁾ The presence of *Candida sp.* in toddlers it is also due to the dirty environmental conditions around toddlers playground, as well as the lack of parental concern for the cleanliness and oral health of toddlers.⁽⁹⁾

This study used a direct examination to determine the presence of pseudohyphae as a form of opportunistic reaction using gram staining. Direct examination with gram staining requires less time than examination with KOH solution. This examination can see the fungus *Candida sp.* morphology, but could not identify the species. The results of Gram staining can be stored for reassessment. Gram stain shows a fungal appearance in the form of budding yeast cells, pseudohyphae, or a mixture of the two. Tissue cells such as epithelium, leukocytes, erythrocytes, and other microbes such as bacteria or parasites can also be seen in the preparation. Fungus appears in the form of budding yeast cells and pseudomycelium is also seen in most of the preparations.⁽³⁾ This study aims to determine whether the fungus *Candida sp.* and to determine the growth form of *Candida sp.* on the oral mucosa of toddlers.

METHODS

The research is a descriptive research, a research used to obtain an overview of the fungus *Candida sp.* on the oral mucosa of toddlers in Jenggog Village Posyandu, South Pekalongan District, Pekalongan City. This research was conducted on 3 – 4 June 2022. Sampling was carried out at the Jenggog Village Posyandu. Sample examination was carried out at the Mycology Laboratory of Akademi Analisis Kesehatan Pekalongan. The sample used was 23 samples, toddlers aged between 1-3 years. Examination of samples using direct examination with gram staining.

RESULTS AND DISCUSSION

The results of the research that was carried out at the Jenggog Village Posyandu, South Pekalongan District, Pekalongan City, using swab samples of the oral mucosa of toddlers between the ages of 1-3 year, examined microscopically and observed directly on gram staining, with a total sample of 23 people, can be seen in Table 1. A summary of the results can be seen in Table 2. Based on the research conducted, it can be seen that the fungus *Candida sp.* on a toddler's oral mucosa swab at Jenggog Village Posyandu, South Pekalongan District, Pekalongan City. This study used 28 samples but from the target of 28 sample, only 23 samples were obtained because the others were not willing to be respondents. Examination using gram stain resulted in 20 (86.9%) positive samples and



3 (13.1%) negative samples. A positive 20 samples (86.9%) consisted of 4 samples that presence budding yeast cells and pseudohyphae (17.3%), and 16 (69,6%) samples contained budding yeast cells only.

TABLE 1. The results of direct microscopic examination with gram stain on a toddler’s oral mucosal swab

Sample No	Budding yeast cell	Pseudohyphae
1	+	-
2	+	+
3	+	+
4	+	-
5	-	-
6	+	+
7	+	-
8	+	+
9	-	-
10	+	-
11	+	-
12	+	-
13	+	-
14	+	-
15	+	-
16	+	-
17	+	-
18	+	-
19	+	-
20	+	-
21	-	-
22	+	-
23	+	-

TABLE 2. Summary of direct microscopic examination results with gram stain on a toddler’s oral mucosa swab

Results	Number	Prosentase
Positive results	20	86,9 %
– Budding yeast cell and pseudohyphae	4	17,3 %
– Budding yeast cell (only)	16	69,8 %
Negative results	3	13,1 %
Total Sampel	24	100 %

Candida sp. actually a fungus that is a member of the normal flora in humans, this fungus is not pathogenic but if it has excess sugar levels, does not maintain oral hygiene, and has impaired immunity or has a low oral pH it can trigger the emergence of *Candida sp.* which can cause thrush. The presence of budding yeast cells in the mucosa is normal considering that *Candida sp.* is a normal flora, but the presence of pseudohyphae indicates a sign of opportunistic infection. Yeast cells will change their morphology by elongating and forming hyphae to form the initial formation of biofilms in order to invade the host cell mucosa.⁽¹⁰⁾

In Jenggot Village Posyandu, South Pekalongan District, Pekalongan City, parents rarely pay attention to oral hygiene and health in toddlers, toddlers rarely brush their teeth so many toddlers have dental caries. This results in factors that support the growth of microorganisms and *Candida sp.* fungi in the toddler's oral cavity. A considerable concentration of *Candida albicans* is often found in the dental biofilm of toddlers suffering from early childhood caries. The identification of *Candida* species in the oral cavity is in positive correlation to poor oral hygiene status and abundant carbohydrate consumption.⁽¹¹⁾

Candidiasis almost always originates from endogenous fungi (from within the host's body), so prevention must include predisposing factors. *Candida* species rarely cause disease if there are no predisposing factors, both superficial and systemic candidiasis. Predisposing factors that allow candidiasis in the oral cavity are poor oral



hygiene, malnutrition, very young age, impaired immunity, and consumption of formula milk using a bottle are some of the predisposing factors for the occurrence of oral candidiasis. In addition, decreased salivary volume and deficiency of salivary antifungal drugs such as lactoferrin and lysozyme can increase the amount of candida in the oral cavity.⁽¹²⁾

CONCLUSION

Based on the results of the examination of *Candida sp.* on the oral mucosa of toddlers at the Jenggog Village Posyandu, South Pekalongan District, Pekalongan City, which was carried out at the Akademi Analisis Kesehatan Pekalongan, it can be concluded that there were 86.9% positive *Candida sp.* samples, consisting of 17.3% samples contained budding yeast cells and pseudohyphae, and 69,8% samples contained budding yeast cells only.

REFERENCES

- [1] M.H. Putri, Sukini and Yodong, *Mikrobiologi Keperawatan Gigi*. (Kementrian Kesehatan RI, Jakarta), pp. 1-401.
- [2] F. Jon and E. Dewa, *Jurnal Teknologi Laboratorium* **6**(2),67-74 (2017).
- [3] V.K. Mutiawati, *Jurnal Kedokteran Syiah Kuala* **15**(3),53-63 (2016).
- [4] H.B. Kusumaputra, and Z. Iskandar. *Periodical of Dermatology and Venereology* **26**(2),39-45 (2014)
- [5] A. Setiyani, Sukesni and Esyuananik, *Asuhan Kebidanan Neonatus, Bayi, Balita, dan Anak Pra Sekolah* (Kementrian Kesehatan RI, Jakarta), pp. 1-237.
- [6] R.D. Rosita, *Statistik Kesehatan* (Kementrian Kesehatan RI, Jakarta), pp. 1-236.
- [7] A. Lupu, G. Paduraru, F. Dragan, M. Starcea, V.V. Lupu, S. Moisa, I. Ionuic, P.L. Iosif, V.E. Rosu, and I. Miron, *Romanian Journal of Oral Rehabilitation* **11**(2), 201-205 (2019)
- [8] D. Riawati and L.Hanifah, *Jurnal Kebidanan Indonesia* **8**(2):85-96 (2017).
- [9] Khusnul and S.J. Muta'aly, *Prosiding Seminar Nasional dan Diseminasi Penelitian Kesehatan* **1**(1):150-154 (2018).
- [10] R. Pereira, R.O. dosSantos Fontenelle, E.H.S deBrito, and S.M. deMorais, *Journal of Applied Microbiology* **131**, 11-22 (2020).
- [11] S. Angelova, R. Andreeva, and T. Stoeva, *Journal of The Union of Scientists – Varna* **23**, 101-105 (2018)
- [12] K.R Sjam, *Medical Journal of the Christian University of Indonesia* **28**(1), 39-47 (2012).