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Overview of Microorganism Patterns Causing Pathological Fluor Albus at Dr. Mohammad Hoesin General Hospital, Palembang, Indonesia

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ABSTRACT

Background: Fluor albus, also known as leucorrhoea, vaginal discharge, or leukorrhea, is the name given to fluids that are secreted from the genitals that are not blood. Pathological fluor albus can be caused by an infection in the lower genitalia or in areas that are more proximal. This study aimed to determine the pattern of microorganisms that cause pathological fluor albus at Dr. Mohammad Hoesin General Hospital, Palembang, Indonesia. **Methods:** This study was a descriptive observational study and used primary data from a direct examination of research subjects at the obstetrics and gynecology polyclinic of Dr. Mohammad Hoesin General Hospital, Palembang, Indonesia. A total of 63 research subjects participated in this study. Analysis of microorganism patterns was carried out univariately using SPSS software. **Results:** The majority of microorganisms that cause pathological fluor albus are *Gardnerella vaginalis*. Meanwhile, in non-pathological conditions of fluor albus, the majority of causative microorganisms are *E. coli*. **Conclusion:** *Gardnerella vaginalis* is the most common causative microorganism of pathological fluor albus disorders at Dr. Mohammad Hoesin General Hospital, Palembang, Indonesia.

1. Introduction

Fluor albus, also known as leucorrhoea, vaginal discharge, or leukorrhea, is the name given to fluids that are secreted from the genitals that are not blood. Fluor albus can be a normal condition (physiological) or a sign of disease (pathological). Normal fluor albus is usually clear to whitish, odorless, and does not cause complaints. Pathological leukorrhea is usually yellowish/greenish/gray, smells fishy/rotten, the amount of discharge is generally large, and causes complaints such as itching, redness (erythema), edema, burning sensation in the intimate area, pain during sexual intercourse (dyspareunia) or pain when urinating (dysuria).¹⁻⁵

Fluor albus occurs due to inflammation as a result of infection of the vaginal mucosa. Occurrence 1-14% in all women of reproductive age and is the cause of the arrival of 5-10 million women to the department of obstetrics and gynecology per year worldwide. Of all the etiologies of leukorrhea, 90% are caused by bacterial vaginosis (33-47%), candidiasis (20-40% and trichomoniasis (8-10%). More than a third of patients who go to gynecology clinics in Indonesia complain of fluor albus, and more than 80% of them are pathological fluor albus. Pathological fluor albus can be caused by an infection in the lower genitalia or in more proximal areas. Infection may be caused by gonococci, trichomonas, candida, chlamydia,

treponema, human papillomavirus (HPV), or genital herpes. Transmission can occur through sexual intercourse.⁶⁻¹⁰ This study aimed to determine the pattern of microorganisms that cause pathological fluor albus at Dr. Mohammad Hoesin General Hospital, Palembang, Indonesia.

2. Methods

This study was a descriptive observational study and used primary data from a direct examination of research subjects at the obstetrics and gynecology polyclinic of Dr. Mohammad Hoesin General Hospital, Palembang, Indonesia. A total of 63 research subjects participated in this study, where the research subjects met the inclusion criteria. The inclusion criteria were patients who went to the obstetrics and gynecology polyclinic at Dr. Mohammad Hoesin General Hospital, Palembang, Indonesia, with main complaints or additional complaints of fluor albus, aged more than 18 years, and willing to participate in this study by signing an informed consent form. This study was approved by the medical and health research ethics committee at Dr. Mohammad Hoesin General Hospital,

Palembang, Indonesia.

This study observed the sociodemographic data of the research subjects and the microbiological data of the research subjects. Microbiological specimen collection was carried out by taking vaginal swabs from research subjects, then an examination of microbiological cultures was carried out at the central laboratory of Dr. Mohammad Hoesin General Hospital, Palembang, Indonesia. Data analysis was carried out using SPSS software version 21. Univariate analysis was performed to present a univariate data distribution in the form of frequency distribution and percentage of each variable.

3. Results

Table 1 presents the general characteristics of the research subjects. The majority of research subjects are of productive age. The majority of research subjects had senior high school education, and the majority worked as housewives. The majority of research subjects have low socioeconomic and the majority are nullipara.

Table 1. General characteristics of research subjects.

Characteristics	Group	
	Fluor albus pathological	Non-fluor albus pathological
Age, n(%)		
20-35 years	26 (52,0)	7 (53,8)
> 35 years	24 (48,0)	6 (46,2)
Education, n(%)		
Primary school	3 (6,0)	1(7,7)
Junior high school	8 (16,0)	2 (15,4)
Senior high school	21 (42,0)	8 (61,5)
College	18 (36,0)	2 (15,4)
Occupation, n(%)		
Housewives	31 (62,0)	7 (53,8)
Civil servant	4 (8,0)	1 (7,7)
Private	11 (22,0)	3 (23,1)
Farmer	4 (8,0)	1 (7,7)
Medical personnel	0 (0)	1 (7,7)
Socioeconomic, n (%)		
< 3 million	30 (60,0)	9 (69,2)
3-5 million	18 (36,0)	3 (23,10)
5-10 million	2 (4,0)	1 (7,7)
Parity, n(%)		
Nullipara	15 (30,0)	10 (76,9)
Primipara	14 (28,0)	1 (7,7)
Multipara	21 (42,0)	2 (15,4)
Total	50	13

Table 2 presents the distribution and percentage of microorganisms that cause fluor albus. The majority of microorganisms that cause pathological fluor albus

are *Gardnerella vaginalis*. Meanwhile, in non-pathological conditions of fluor albus, the majority of causative microorganisms are *E. coli*.

Table 2. Distribution and percentage of microorganisms fluor albus.

Microorganisms				Total	Fluor albus (-)	Fluor albus (+)
<i>Gardnerella vaginalis</i>				13	3 (23,1)	10 (76,9)
<i>Bacteroides sp</i>				7	2 (28,6)	5 (71,4)
<i>E. coli</i>				11	6 (54,5)	5 (45,5)
<i>Mycoplasma sp</i>				1	0 (0)	1 (100)
<i>Staphylococcus aureus</i>				3	2 (66,7)	1 (33,3)
<i>Mobiluncus sp</i>				2	0 (0)	2 (100)
<i>Klebsiella pneumonia</i>				7	1 (14,3)	6 (85,7)
<i>Pseudomonas stutzeri</i>				1	0 (0)	1 (100)
<i>Acinetobacter baumannii</i>				5	0 (0)	5 (100)
Total				50	14	36
Bacterial vaginosis	Gram-negative	47	94%	<i>Gardnerella vaginalis</i>	13	27.6%
				<i>Bacteroides sp</i>	7	14.8%
				<i>E. coli</i>	11	23.4%
				<i>Mycoplasma sp</i>	1	2.1%
				<i>Mobiluncus sp</i>	2	4.2%
				<i>Klebsiella pneumonia</i>	7	14.8%
				<i>Pseudomonas stutzeri</i>	1	2.1%
	<i>Acinetobacter baumannii</i>	5	10.6%			
Gram positive	3	6%	<i>Staphylococcus aureus</i>	3	100%	

4. Discussion

Gardnerella vaginalis is a common gram-negative bacteria that cause bacterial vaginosis. Besides *Gardnerella vaginalis*, other gram-negative bacteria such as *Bacteroides sp*, *Mobiluncus sp*, and *Mycoplasma sp*. These bacteria were also found in this study. Of all the etiologies of fluor albus, 90% are caused by bacterial vaginosis (33%-47%), candidiasis (20-40% and trichomoniasis (8-10%). However, this study did not find candida and trichomoniasis in 63 swab samples, and all were categorized as bacterial vaginosis. Candida and trichomoniasis were not found in this study, which was possible because there was no free sexual intercourse that carries the risk of causing sexually transmitted infections like most patients with trichomoniasis. While candidiasis generally occurs due to immune deficiency, such as in people with HIV/AIDS, which was also not found in this sample.¹¹⁻¹⁵

An interesting finding is the identification of *Acinetobacter baumannii* on vaginal swabs. This bacterium is a species of *Acinetobacter spp*. It is most

commonly isolated from humans and is more common in nosocomial infections than in community infections. Bacteria are rarely found as a cause of vaginal discharge but can be found in cases of urinary tract infections (UTI). The detection of these bacteria is more likely caused by vaginal swab contaminants from the nosocomial environment or contaminants from the urine of UTI patients. *Pseudomonas stutzeri* was also never reported as a cause of leucorrhoea, even rarely found as a cause of infection. *Pseudomonas stutzeri* is an opportunistic gram-negative bacterium that is often found in hospitals (nosocomial), although it rarely causes infections. The detection of this bacteria is more likely due to vaginal swab contaminants from the environment.¹⁶⁻²⁰

5. Conclusion

Gardnerella vaginalis is the most common causative microorganism of pathological fluor albus disorders at Dr. Mohammad Hoesin General Hospital, Palembang, Indonesia.

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