

Published By : the Indonesian Society  
for Clinical Microbiology

# Identification of *Streptococcus intermedius* and *Stenotrophomonas maltophilia* in recurrent leucorrhoea: a case report



Marselinus Edwin Widyanto Daniwijaya<sup>1</sup>, Atthobari<sup>1</sup>,  
Ade Christanti Putri Sidabutar<sup>2</sup>, Devi Artami Susetiati<sup>2</sup>, Titik Nuryastuti<sup>1\*</sup>

<sup>1</sup>Microbiology Department, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia

<sup>2</sup>Department of Dermatology and Venereology (DV), Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia

\*Corresponding to:  
Titik Nuryastuti; Department of Dermatology and Venereology (DV), Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia;  
[t.nuryastuti@ugm.ac.id](mailto:t.nuryastuti@ugm.ac.id)

Received: 2021-06-14  
Accepted: 2021-10-30  
Published: 2021-12-21

## ABSTRACT

**Introduction:** Leucorrhoea or fluor albus a whitish vaginal discharge is commonly found in reproductive women with familiar symptoms such as itching, with or without distinctive odor. Several factors are responsible for leucorrhoea including infectious and non-infectious factors. *Streptococcus intermedius* and *Stenotrophomonas maltophilia* are bacteria that cause infections that are rarely found in vaginal discharge.

**Case description:** A 23-year-old woman, with a history of recurrent vaginal discharge, presented herself in the outpatient clinic dermatology and venereology RSUP Dr. Sardjito, with the main complaint of vaginal discharge. On the previous visit to the outpatient clinic, she was diagnosed with vulvovaginal candidiasis and received Azithromycin, ketoconazole. Microbiology culture of the vaginal swab results in two bacterial infections *Streptococcus intermedius* and *Stenotrophomonas maltophilia*.

**Conclusion:** A rare finding on the identification of *Streptococcus intermedius* and *Stenotrophomonas maltophilia* in outpatients with recurrent leucorrhoea. These findings suggest that *Streptococcus intermedius* and *Stenotrophomonas maltophilia* which is an uncommon profile of microorganism could also be assumed to be involved in recurrent leucorrhoea in this case report. Other pathogenic organisms should be considered since there limitation in the identification process in diagnostic of the patient.

**Keywords:** *Streptococcus intermedius*, *Stenotrophomonas maltophilia*, recurrent leucorrhoea.

**Cite This Article:** Sidabutar, A.C.P., Susetiati, D.A., Nuryastuti, T. 2021. Identification of *Streptococcus intermedius* and *Stenotrophomonas maltophilia* in recurrent leucorrhoea: a case report. *Journal of Clinical Microbiology and Infectious Diseases* 1(2): 38-41.

## INTRODUCTION

Leucorrhoea or flour albus (whitish discharge) is often found in reproductive-age women during their visit to the health center. Vaginal discharge or likely known as leucorrhoea is a discharge, other than blood, from the vagina whether smelling or not, and accompanied by local itching.<sup>1</sup>

Several factors for leucorrhoea are endogenous factors from inside the body and exogenous factors from outside the body. Endogenous factors include abnormalities in the vagina, exogenous factors can be divided into two, namely infections and non-infection. Infection factors can be due to bacteria, fungi, parasites, viruses, while non-infectious factors are the entry of foreign objects into the vagina either intentionally or

not, disruption in the microbiome flora, endocrine, or hormonal abnormalities.<sup>1</sup>

Vaginitis which causes leucorrhoea is a clinical condition with a pathological invasion of the vaginal epithelium by the microorganisms. Reproductive age group women are at increased risk for vaginitis. Leucorrhoea is also be assumed as physiological or pathological etiologies. Various microbial is a possible cause of infection of vagina leading to leucorrhoea, there are three main forms of infectious vaginitis are Trichomonal vaginitis, Candidal vaginitis, and Bacterial vaginosis. The microbiome plays an important role in the process, as such considerable decrease in the number of lactobacilli in the vagina and the pH is altered and results in increased growth of other bacteria. Common agents of

bacterial vaginosis include *Gardnerella vaginalis*, *mobiluncus*, *Bacteroides*, *saprophytes*, *Mycoplasma hominis*, and others.<sup>2</sup> Rani et al published an article that stated Bacterial isolates were predominant with *Gardnerella vaginalis* forming a major group with 42 (32.30%) and other bacterial isolates like *Diphtheroids* 23%, *Coagulase-negative Staphylococci* 19.23%, *Other Streptococci* 13.07%, *Staph aureus* 11.53%, *Acinetobacter* 6.15%, *Escherichia coli*, and *Klebsiella* 5.38%, *Pseudomonas* and *Micrococci* 3.07% and  $\beta$  hemolytic *Streptococci* in 1.53%.<sup>2</sup>

Based on the data by Rani et al., *Stenotrophomonas maltophilia* was not identified as a bacterial isolate in vaginal discharge in comparison with *Streptococcus intermedius*. Indicating a possibility of involvement in recurrent

leucorrhoea. This article reports a case of recurrent vaginal discharge in a 23-year-old woman with Microbiology culture of the vaginal swab showing the presence of *Streptococcus intermedius* and *Stenotrophomonas maltophilia*.

## CASE DESCRIPTION

A 23-year-old woman, with a history of recurrent vaginal discharge, presented herself in the outpatient clinic dermatology and venereology RSUP Dr. Sardjito, with the main complaint of recurrent leucorrhoea. Relevant past medical history has indicated that she visited the clinic twice with the same main complaint on November 26, 2020. On her first visit, she had a leucorrhoea after she had sexual activity with her partner. She was diagnosed with candidal vulvovaginitis (CVV) and received Azithromycin 500 mg tablets and 200 mg Ketoconazole tablets. On December 4, 2020, the patient returned to control with complaints of improved vaginal discharge, but mucoid discharge in the vagina was still visible.

On examination of the vulva, it appears calm on the vaginal wall of the cervix, cervix, and posterior fornix, there is a mucoid whitish discharge. The results of laboratory tests were not found Diplococcus Gram-Negative Intracellular (DGNI) and the number of PMN <30 low power field (10x ocular with 10x objective), with pH: 4.5 and vaginal T cells were not found. Meanwhile, the KOH examination did not find the suspected image. In vaginal introitus, there is no discharge, erythema, and edema. Meanwhile, the vagina appears mucoid discharge. The patient was diagnosed as having improved bacterial vulvovaginitis. Next, a vaginal swab and skin scraping are performed to look for the microorganisms that cause it.

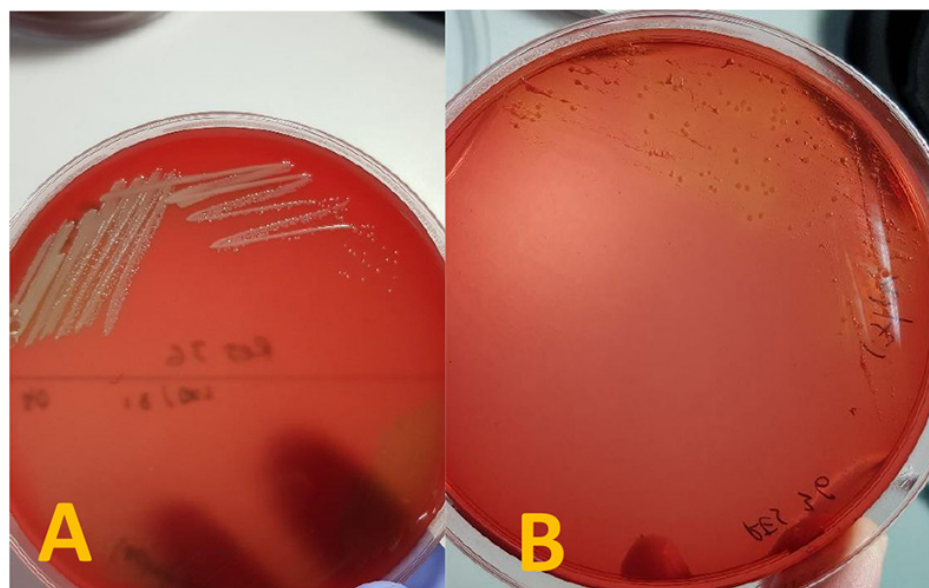
December 17, 2020, on the third visit to the clinic she reports vaginal discharge had decreased, no signs of itching, no discomforting odor. On examination of the vulva, it appears calm on the vaginal wall of the cervix, cervix, and posterior fornix, there is a mucoid whitish discharge. The results of laboratory tests were DGNI negative, clue cells negative, and the number of PMN >30 low power field (10x ocular with 10x objective), with pH: 5, NaCl fornix swab Trichomonas

negative, clue cell negative, and vaginal T cells were not found. Meanwhile, the KOH examination did not find the suspected pathogen of the hypha. A serology test was performed as a routine examination (Table 1).

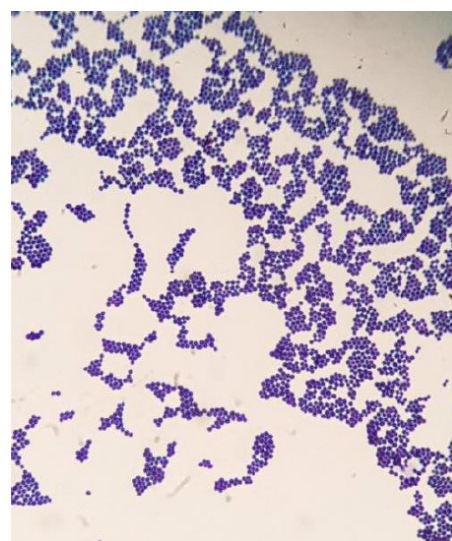
**Table 1.** Test serology

| No. | Type of Test | Result       |
|-----|--------------|--------------|
| 1.  | VDRL         | NEGATIVE     |
| 2.  | TPHA         | NEGATIVE     |
| 3.  | HIV          | NON-REACTIVE |

Microbiology culture of the vaginal swab was performed and identified two bacterial microorganisms *Streptococcus intermedius* and *Stenotrophomonas maltophilia* (Figure 1). *Stenotrophomonas maltophilia* susceptible to levofloxacin and cotrimoxazole. *Streptococcus intermedius* susceptible to cefepime, vancomycin, tetracycline, levofloxacin, chloramphenicol, linezolid with intermediate to clindamycin and erythromycin. The patient was reassured about the finding and received education on health promotion also to continue



**Figure 1.** Culture in Blood Agar Medium (A) in MacConkey Agar Medium (B)



**Figure 2.** Gram staining of *Streptococcus intermedius*



**Figure 3.** Gram staining of *Stenotrophomonas maltophilia*



the medication before she was allowed to return home.

## DISCUSSION

Vaginal discharge or fluor albus is an excessive body fluid released from the genital organs in women, which can be physiological or pathological. Physiological vaginal discharge may appear according to the menstrual process, odorless and clear to whitish. Women may have experienced abnormal vaginal discharge under several conditions, such as those related to the menstrual cycle and stress. Still, most of these cases are described as normal physiological vaginal discharge. Meanwhile, the characteristics of pathological vaginal discharge are generally smelly (fishy/rotten), usually yellowish/greenish/grey, and are excreted in large quantities. Pathological vaginal discharge is also accompanied by itching, redness (erythema), burning genitals, edema, and pain. Pain in pathological vaginal discharge can be felt by the patient during sexual intercourse (dyspareunia) or pain when urinating (dysuria).<sup>3</sup>

Vaginal discharge can occur due to two factors, namely endogenous factors and exogenous factors. Endogenous factors are etiology originating from within the body, including abnormalities in the vagina or abnormalities in hormones. Cervical ectopia can be associated with mucoid discharge, and if the symptoms are extensively treated with cryotherapy or diathermy, evidence to support the effectiveness of these treatments is lacking.<sup>4</sup> The second factor is known as exogenous factors which are divided into two namely infections and non-infection. Infection factors can be due to bacteria, fungi, parasites, viruses, while non-infectious factors are the entry of foreign objects into the vagina either intentionally or not, clean the vagina less cleanly, the area around the vagina is moist, decreased body condition activity that is too tired and endocrine or hormonal abnormalities.<sup>1</sup>

The sample presented in the case report was from a woman with recurrent vaginal discharge who came to the Dermatovenereology clinics for the Sexually Transmitted Diseases Division RSUP Dr. Sardjito Yogyakarta Indonesia. Gram staining, KOH staining, bacterial

and fungal culture, and wet preparations for parasites were examined. Fungal culture performed did not show fungal growth, parasitic examination reported as a negative result. Though both fungal and parasitic examination resulted in a negative, bacterial culture showed growth of two microorganisms via culturing media (Figure 1). Furthermore, using the BBL™ Crystal™ identification system by BD we identified a Gram-positive coccus, *Streptococcus intermedius* accompanied non fermentative Gram-negative bacillus *Stenotrophomonas maltophilia* using semi-automatic method bioMérieux's API identification products test kits for identification Gram-negative. Therefore, in this case, it was found that the bacteria that caused the most leucorrhoea were *Streptococcus intermedius*, followed by *Stenotrophomonas maltophilia*.

The *Streptococcus anginosus* (SAG) group, often referred to as the *Streptococcus milleri* group, has been widely detected in the mouth, upper respiratory tract, gastrointestinal tract, and vagina.<sup>1</sup> There are three different species classified under the SAG: *S. intermedius*, *S. constellatus*, and *S. anginosus*.<sup>5</sup> SAG consist of gram-positive (Figure 2), catalase-negative cocci and nonmotile facultative anaerobes that typically have small colonies ( $\leq 0.5$  mm diameter) and exhibit variable hemolysis pattern (alpha, beta, or gamma). *Streptococcus intermedius* is a  $\beta$ -hemolytic Gram-positive, while *S. constellatus* is generally beta-hemolytic.<sup>6,7</sup> Lactobacilli are a type of normal flora that are commonly found and maintain normal vaginal pH below 4.5. However, other organisms can replace this composition in some conditions, thereby increasing the chances of bacterial vaginosis (BV). In addition to changes in the composition of these microorganisms, BV can also be influenced by sexual activity, receptive anal before vaginal intercourse, smoking, sex with uncircumcised male partners, lack of vaginal H<sub>2</sub>O<sub>2</sub>-producing lactobacilli.<sup>8</sup>

The composition of the vaginal microbiota is also influenced by age, changes in hormone levels (during the menstrual cycle, during menopause, pregnancy, or the use of hormonal contraceptives), genital infections, sexual activity and hygiene. Most of this commensal microbiota have mutualistic

relationships with human hosts. Still, some opportunistic pathogens can cause chronic illness, premature delivery, or life-threatening maternal and fetal disease.<sup>9</sup>

*Stenotrophomonas maltophilia*, previously called *Pseudomonas maltophilia* or *Xanthomonas maltophilia*, is a nosocomial pathogen found in the clinical condition of patients, both as an opportunistic and as a true pathogen.<sup>10</sup> Morphology and properties *S. maltophilia* is the first Gram-negative rod bacterium (Figure 3) recognized as a new species *Pseudomonas* and later described as the cause of human infection. These organisms can cause nosocomial infections and are frequently isolated from clinical specimens implicated in catheter-associated bacteremia and septicemia, urinary and respiratory tract infections, mastoiditis, conjunctivitis, and endocarditis.<sup>9-11</sup>

In this case report, it was found that two main bacteria were identified in a 23-year-old woman patient with recurrent leucorrhoea namely *S. intermedius* and *S. maltophilia*. The patient is sexually active and would increase the risk of possible infection through sexual intercourse. *S. intermedius* as one of three SAG groups is a possible cause of recurrent leucorrhoea with the presence of *S. maltophilia* as contributing factor to the condition since *S. maltophilia* is not bacterial flora of the female genital tract.

Several findings are accounted for in this assumption, samples when cultured in Sabouraud Dextrose Agar (SDA) agar, used for the isolation, cultivation, and maintenance of non-pathogenic and pathogenic species of fungi and yeasts show no growth. The results of laboratory tests were DGNI negative, clue cells negative, and the number of PMN >30 low power field (10x ocular with 10x objective), with pH: 5, NaCl fornix swab *Trichomonas* negative, clue cell negative, and vaginal T cells were not found. Serology test has also reported negative for Venereal disease research laboratory (VDRL), *Treponema Pallidum* hemagglutination (TPHA), and human immunodeficiency virus (HIV).

## CONCLUSIONS

Leucorrhoea due to specific or nonspecific vaginitis is common in females, especially in the reproductive age group. The present

study revealed that vaginitis is mostly polymicrobial in nature and Laboratory confirmation is essential to know the etiology. An increase in the amount, odor, or color of abnormal vaginal discharges causes STI patients to seek treatment. Symptoms of leukorrhea are generally caused by vaginal infections and rarely due to cervical infections.

In conclusion, we found that microorganisms *S. intermedius* and *S. maltophilia* were identified from samples of female patients with recurrent vaginal discharge. Interestingly, *S. maltophilia* is uncommon to be found in similar vaginal discharge cases, and as it is one of the emerging ubiquitous pathogens, therefore, precaution and awareness should be practiced in future diagnosis and identification.

## DISCLOSURE

### Funding

No funding

### Ethical Approval

The study is exempt from ethical approval in our institution

### Conflict of Interest

There is no conflict of interest in this study

## Author Contributions

Conceptualization, methodology and writing original draft preparation: Susetiati D.A.; Formal analysis: Daniwijaya E.W., Atthobari; Data curation: Daniwijaya E.W., Atthobari, Sidabutar A.C.P.; Validation: Nuryastuti T; Writing, review, and editing: Daniwijaya E.W; Approval of final manuscript: all authors

## ACKNOWLEDGEMENT

The authors would like to thanks to Mr. Erik Hookom and all staff of Klinik Bahasa in Faculty of Medicine Gadjah Mada University for editing this journal.

## REFERENCES

1. Zahara IW, Roesyanto ID, Amelia S. Profile of Microorganisms Causing Vaginal Discharge in Reproductive Women At Dr. Pirngadi Hospital in Medan. *Bul Farmatera*. 2020;5(1):183.
2. Rani YU, Sarada D, Varalakshmi D, Rajeswari MR, Padmaja Y. Microbiological Study of Leucorrhoea With Special Reference To Gardnerella Vaginalis. *Int J Adv Res*. 2015;3(7):1192–9.
3. Trilisnawati D, Purwoko IH, Devi M, Nugroho SA, Theresia L. *Bioscientia Medicina : Journal of Biomedicine & Translational Research Etiology, Diagnosis , and Treatment of Leukorrhea*. :599–618.
4. Spence D, Melville C. Vaginal discharge. *Br Med J*. 2007;335(7630):1147–51.
5. Noguchi S, Yatera K, Kawanami T, Yamasaki K, Naito K, Akata K, et al. The clinical features of respiratory infections caused by the *Streptococcus anginosus* group. *BMC Pulm Med*. 2015;15(1):1–9.
6. Issa E, Salloum T, Tokajian S. From Normal Flora to Brain Abscesses: A Review of *Streptococcus intermedius*. *Front Microbiol*. 2020;11(May):1–12.
7. Jiang S, Li M, Fu T, Shan F, Jiang L, Shao Z. Clinical Characteristics of Infections Caused by *Streptococcus Anginosus* Group. *Sci Rep*. 2020;10(1):1–6.
8. Mendling W. Normal and abnormal vaginal microbiota. *LaboratoriumsMedizin*. 2016;40(4):239–46.
9. Kaambo E, Africa C, Chambuso R, Passmore J-AS. Vaginal Microbiomes Associated With Aerobic Vaginitis and Bacterial Vaginosis. *Front Public Heal*. 2018;6(March):1–6.
10. Adegoke AA, Stenström TA, Okoh AI. *Stenotrophomonas maltophilia* as an emerging ubiquitous pathogen: Looking beyond contemporary antibiotic therapy. *Front Microbiol*. 2017;8(NOV):1–18.
11. de Oliveira-Garcia D, Dall'Agnol M, Rosales M, Azzuz ACGS, Alcántara N, Martinez MB, et al. Fimbriae and adherence of *Stenotrophomonas maltophilia* to epithelial cells and to abiotic surfaces. *Cell Microbiol*. 2003;5(9):625–36.



This work is licensed under a Creative Commons Attribution