



ORIGINAL RESEARCH PAPER

Obstetrics & Gynecology

MICROBIOLOGICAL PROFILE IN WOMEN WITH SYMPTOMATIC VAGINAL DISCHARGE

KEY WORDS: Vaginal discharge, Bacterial vaginosis, candidiasis, Trichomoniasis

Dr. Ch. Siri Chandana

Postgraduate.

ABSTRACT

The study's main goals are to determine the prevalence of symptomatic vaginal discharge in different age groups and the microbiological makeup of women who report with symptomatic vaginal discharge. The study was conducted in 200 cases. A detailed clinical history and examination of all cases were done. A speculum examination done to visualize cervix and vagina, swabs were collected from the posterior fornix of vagina and sent for microbiological examination. Following tests were done a) Gram staining and Nugent scoring system used, based on the morphology of the bacteria, score ≥ 7 is considered positive for bacterial vaginosis, b) Wet mount preparation done to look for motility of Trichomonas, c) KOH preparation, d) Swabs are inoculated in Blood agar, MacConkey's agar and Sabouraud's dextrose agar. Maximum patients had associated symptoms as foul smell (27%), followed by itching (26%), others like abdominal pain (11.5%), burning micturition (6%), heavy menstrual bleeding (4.5%) and low backache (2.5%). Majority had homogeneous discharge (44.5%), followed by mucopurulent (19.5%), curdy white (18%) and yellowish (18%). Incidence of bacterial vaginosis is maximum (42.5%), followed by vaginal candidiasis (21.5%), other non-specific (17%) and Trichomonas (8%). In around 11% of cases no cause was identified.

INTRODUCTION:

Normal vaginal discharge may be abundant, but it usually smells mild and is not accompanied by itchiness or discomfort. Abnormal/pathological vaginal discharge is associated with change in colour, consistency, volume, or odour, and may be associated with symptoms such as itch, soreness, dysuria, pelvic pain, or intermenstrual or post-coital bleeding. Infertility, endometriosis, post-hysterectomy cuff infection, urethral syndrome, miscarriage, premature labour, premature rupture of the membranes, low birth weight, and increased susceptibility to STIs like HIV are all caused by abnormal vaginal discharge.

Table 1: Differentiating Features Of Physiological And Pathological Vaginal Discharge

Physiological Vaginal Discharge	Pathological Vaginal Discharge
Does not usually cause any discomfort to patient (except for hygiene problems)	Usually causes significant distress and irritation to patient
Transudate to whitish in color	Color vary from dirty white to yellowish
It is not associated with itching	May be associated with itching
Not foul smelling	May be foul smelling
Amount of discharge may vary with different phase of menstrual cycle	Amount of discharge does not vary with different phase of menstrual cycle
Discharge is not usually adherent to vaginal wall	Discharge is not usually adherent to vaginal wall Discharge is usually adherent to vaginal wall and pools up in dependent area of vagina

The prevalence of pathological vaginal discharge in India is estimated to be 30%. Prevalence of Bacterial vaginosis is 33%-47%, candidiasis 20%-40% and trichomoniasis 8%-10%, these constitute the most common causes of pathological vaginal discharge. Endocervical infections caused by Chlamydia trachomatis and Neisseria gonorrhoeae may cause vaginal discharge, dysuria, post-coital/intermenstrual bleeding, deep dyspareunia, pelvic pain and tenderness or reactive arthritis. Less common causes are infection with human papilloma virus, primary syphilis, mycoplasma genitalium, ureaplasma urelyticum, E. coli.

Table 2: Differential Diagnosis Of Infective Vaginal

Discharge And Management

Feature	Vulvovaginal candidiasis	Bacterial vaginosis	Trichomoniasis	Aerobic vaginitis
Nature of discharge	Thick white discharge Non-offensive odour	Thin discharge scanty to profuse or frothy Offensive or fishy odour	yellow discharge Offensive odour	Purulent discharge
Associated Symptoms	Vulvar itching, Superficial dyspareunia, Dysuria	No discomfort or itching	Vulvar itching or soreness, Dysuria, Low abdominal pain, Dyspareunia	Burning, itching, dryness, dyspareunia, dysuria
Signs	Discharge coating vagina and vestibule	No inflammation of vulva	Vulvitis and vaginitis 'Strawberry' cervix	Intense inflammatory reaction
pH of vaginal fluid	< 4.5	> 4.5	> 4.5	> 4.5
Microscopy	Yeasts and pseudo-hyphae	"Clue" cells	Protozoans with wavy motility	Numerous pus cells, no normal flora, round bacteria
Treatment	All topical and oral azoles give 75% cure. Clotrimazole pessary 500mg stat or 10% cream or oral fluconazole 150mg stat. In	Oral metronidazole 400mg bd for 5-7 days, or 2g stat. metronidazole 0.75% vaginal application for 5	Oral metronidazole 400mg bd for 5-7 days or 2g stat Clotrimazole 100mg pessary for 6 days if treatment with	Broad spectrum antibiotics

	pregnancy: avoid oral azoles and use intravagina	nights or clindamyc in 2% cream 5gm	metronidazole fails	
--	--	-------------------------------------	---------------------	--

Objective Of The Study

- 1) To know the incidence of symptomatic vaginal discharge in various age groups.
- 2) To know the microbiological profile in women presenting with symptomatic vaginal discharge

MATERIALS AND METHODS:

This is a descriptive, cross-sectional study. The Source of data is from patients who got admitted to gynaecology wards in the King George Hospital, Vizag. Simple randomization is done. The sample size is 200. The study is done for 12 months duration from December 2020 to December 2021.

Inclusion Criteria:

- 1. All women presenting to gynecology OPD with symptomatic vaginal discharge.

Exclusion Criteria:

- 1. Unmarried.
- 2. Menstruating women.
- 3. Pregnant women.
- 4. Women who had delivered/ undergone abortion in last 6months.
- 5. Treated with antimicrobial/ antifungal in the last 1 month.
- 6. Women who had intercourse in the last 72 hrs.

PROCEDURE:

The hospital's Ethics Committee approved the study protocol, and informed consent was taken from all included patients. A detailed clinical history and examination of all cases were done, a speculum was inserted into the vagina, to visualize cervix and vagina, any pathology in the cervix and vagina noted, swabs was collected from the posterior fornix of vagina and sent for microbiological examination.

Nature Of Discharge:



Figure 1: Showing Homogenous Vaginal Discharge



Figure 2: Showing Curdy White Discharge Of Vagina

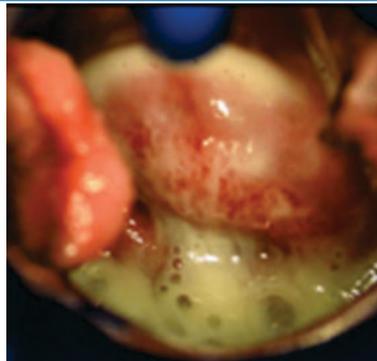


Figure 3: Showing Yellowish And Frothy Discharge Of Vagina.



Figure 4: Showing Mucopurulent Discharge Of Vagina.

Following Tests Were Done:

Wet Mount Preparation:

Microscopic examination of saline wet mount preparation of vaginal discharge is done. A drop of discharge is mixed saline on a glass slide, covered with clean cover slip and examined under high power for the presence of epithelial cells, pus cells, clue cells and Trichomonas.



Figure 5: Wet Mount Of Vaginal Discharge Showing Clue Cells

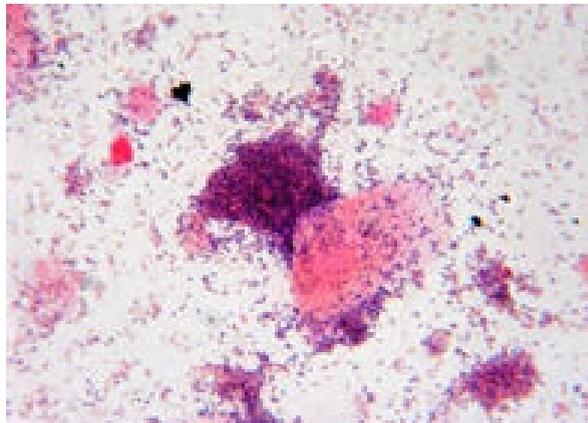


Figure 6: Gram Smear Of Vaginal Flora Showing Deficient Lactobacillus.

Table 3: Nugent Score

Score	Lactobacillus (parallel-sided, gram positive rods)	Gardnerella / Bacteroides (tiny, gram variable coccobacilli and rounded, pleomorphic, gram negative rods with vacuoles)	Mobiluncus (curved gram negative rods)
0	>30	0	0
1	5-30	<1	1-5
2	1-4	1-4	>5
3	<1	5-30	
4	0	>30	

Diagnosing Criteria:

The Nugent criteria score vaginal flora normal (0-3) intermediate(4-6) and (7-10) were considered as BV positive and followed up.

KOH Preparation

A drop of 20% KOH is added after the specimen is set up on a glass slide. Then, using a gauze to absorb any extra solution, affix a clean cover slip.

Slide is examined at high magnification to search for yeast hyphae or developing yeast.



Figure 7: Showing Candida In KOH Preparation.

Culture:

Specimens are injected into blood and Macconkey agar. For 24 hours, the infected medium were incubated aerobically at 37 °C. The plates were incubated for an additional 24 hours if there was no growth after the initial 24 hours. After 48 hours, the plates were discarded if there had been no development.

IDENTIFICATION OF THE ISOLATES:

Then, using normal laboratory techniques, the developed organisms were identified based on their microscopic morphology, Gram's staining characteristics, colonial and cultural traits, and biochemical reactions.



Figure 8: Growth Of E Coli In MacConkey's Agar

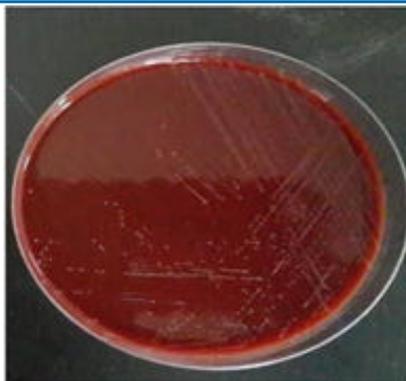


Figure 9: Growth Of Staphylococcus In Blood Agar

Culture In SDA Agar :

As with conventional bacteriological media, Sabouraud agar plates can be infected by streaking or by letting the medium come into contact with outside air. Molds are typically kept at room temperature (22 to 25 °C), while yeasts are kept at 28 to 30 °C or 37 °C if dimorphic fungi are suspected. Observing different elements of colony shape, distinctive microscopic structures, rate of growth, environment that promotes the organism's growth, and source of specimens are all used to identify fungi. Various biochemical techniques are used to identify yeasts.



Figure 10: Candida Albicans Isolated In SDA Agar

RESULTS:

Table 4: Age Wise Distribution

Age In Years	Number of Patients (n=200)	Percentage (%)
20-29	100	50%
30-39	78	39%
40-49	22	11%
Total	200	100

Table 5: Distribution According To Educational Status

	Number Of Cases(n=200)	Percentage(%)
Illiterate	27	13.5
Primary Schooling	89	44.5
Secondary Schooling	54	27
Undergraduate	18	9
Graduation	12	6

Majority of patients come under upper lower class (42.5%), followed by lower class(31%) and lower middle class (16.5%).

Table 7: Associated Symptoms With Vaginal Discharge

	Total number of patient (n=200)	Percentage (%)
Foul Smell	54	27

Itching	52	26
Vaginal Discharge alone	45	22.5
Abdominal Pain	23	11.5
Burning Micturition	12	6
Heavy Menstrual Bleeding	9	4.5
Low Backache	5	2.5
	200	100

Table 6: Distribution According To Socioeconomic Status

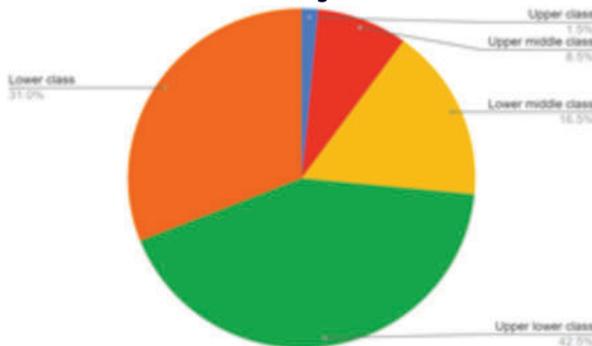


Figure 11: Distribution According To Socioeconomic Status.

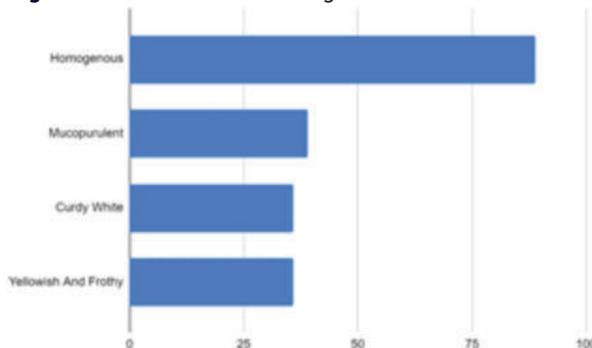


Figure 12: Distribution according to Colour of discharge.

Majority of patients 44.5% presented with homogenous, followed by mucopurulent in 19.5%, curdywhite and yellowish in 18%

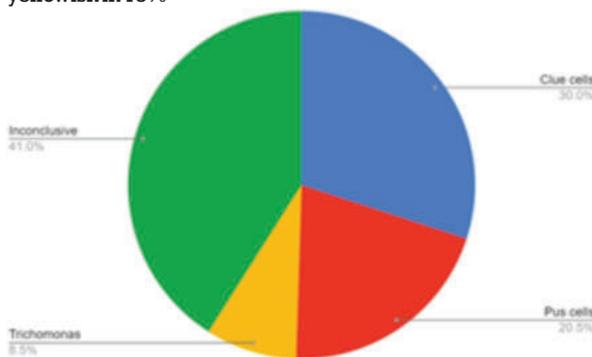


Figure 13: Comparison of Wet Mount.

Results were inconclusive in 82(41%) cases , 60(30%) cases showed clue cells followed by pus cells 41(20.5%) and Trichomonas in 17(8.5%)

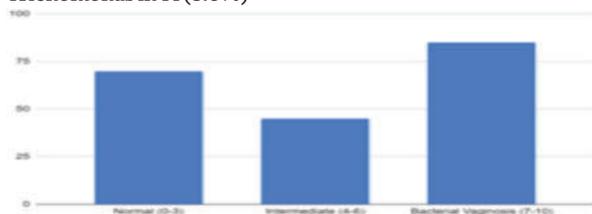


Figure 14: Nugent Scoring.

85(42.5%) cases had Bacterial vaginosis, intermediate in 45(22.5%) , and Normal in 70(35%) cases

Table 8: Diagnosis

	Number of Patient (n=200)	Percentage (%)
Bacterial vaginosis	85	42.5%
Vaginal Candidiasis	43	21.5%
Other non specific	34	17%
Trichomonas Vaginalis	16	8%
Normal vaginal flora	22	11%
Total	200	100

Table 9: Species Of Candida

	Number of cases (n=43)	Percentage
Candida Albicans	40	93.02
Candida Parapsilosis	3	6.9

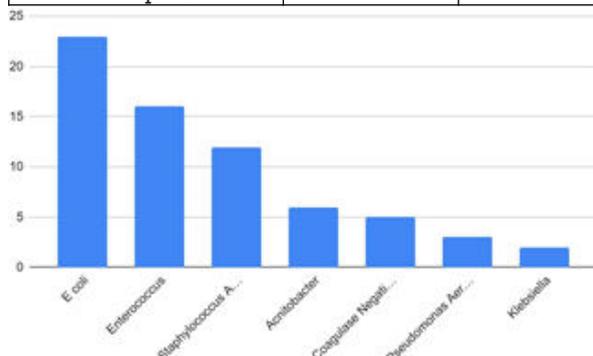


Figure 15: Shows Other Organisms Isolated In The Study.

E coli is isolated in 23 cases, followed by Enterococcus in 16 cases, Staphylococcus aureus in 12 cases

DISCUSSION:

The study comprised 200 cases in all that had vaginal discharge as their initial presenting complaint. According to the study, the prevalence rate is highest in the younger age range between 20 and 29 years (50%) followed by 30 to 39 years (39%) and 40 to 49 years (11%) which is consistent with findings from several previous research. Guntoory L. et al. 149; Geetha Mani et al. 150; Patel V. et al.; and (15-24 years, 25-34 years, 35-44 years, 45-54 years, 33%, 72%, 52%, and 10%, respectively)

In their investigations, Kulkarni et al. and Choudhry V et al. demonstrated the prevalence of vaginal discharge in women from lower-class and lower middle-class backgrounds. According to the results of our survey, 42.5% of them were higher lower class, 31% were lower class, and 16.5% were lower middle class. Poor personal and genital hygiene, such as failing to properly clean one's genitalia after urinating or not having access to enough water for cleansing, or using cloth instead of a sanitary pad, may be to blame for the observation made above.

In our study, 22.5% of patients only reported vaginal discharge; however, 77.5% also reported other symptoms, such as abdominal pain (11.5%), hot urination (6%), heavy menstrual flow (4.5%), and low backache (2.5%). which showed comparable patterns in the research by Gunturi et al. and Choudry et al.

Bacterial vaginosis (42.5%) was the most frequent cause of abnormal vaginal discharge in our study, followed by vaginal candidiasis (21.5%), other non-specific organisms (17%), and Trichomonas vaginalis (8%). These findings agree with research by Fox et al. and Puri KJ et al.

In our study population, bacterial vaginosis was the most

prevalent etiological reason for vaginal discharge (42.5%). Maximum prevalence was in the age group of 20–29 (44.7%), and symptoms included homogeneous discharge (%) and itching (%) frequently. These results contrast with those of Koumans et al; 29.2% and Pawanerkar et al (19%), which may be related to geographic distribution, and are similar to studies conducted by Mahadani et al (44.3%) and Kamara et al (44.10%). Frequent sexual contact and following frequent washing with disinfectant may be to blame for the high frequency of bacterial vaginosis. Additionally, we noted that 31.7% of cases involved additional species such as *Acinetobacter* (3.5%), *Staphylococcus* (5.8%), *enterococcus* (5.8%), *Coagulase-negative staphylococcus* (3.5%), and *E. coli* (9.4%).

Our study's incidence of vaginal candidiasis (21.5%) compares favourably to that of Ries et al (20–25%) 's and Kamara et al 's (30.7%), with the majority of cases (46.5%) affecting people aged 20 to 29. The most common symptoms in these cases are curdy white discharge (83.7%) and itching (46.5%). Although vaginal candidiasis is not a sexually transmitted disease, the majority of cases are seen in this age group due to elevated oestrogen concentrations, which form the basis of its pathogenesis. It may also be due to the use of OCPs as contraception, which is another risk factor for vaginal candidiasis. In our investigation, we also isolated *Klebsiella* (2.3%), *enterococcus* (2.3%), *E coli* (4.3%), and *Staphylococcus* (2.3%) in addition to candida.

We detected 34 cases (about 17%). *E. coli*, *Enterococcus*, *Staphylococcus aureus*, *coagulase-negative staphylococcus*, *Pseudomonas aeruginosa*, and *Klebsiella* were among the non-specific organisms that were cultivated. These organisms are a component of the female genital tract's normal flora. Because the normal flora may be a source of pathogens or interact antagonistically or synergistically with exogenous pathogens, it is crucial to understand the physiological factors that determine the vaginal microflora. Among 34 patients who had the aforementioned growth, 86% had mucopurulent discharge and reported symptoms such as foul-smelling discharge (44%), burning urination (23.5%), itching (17.6%), pain in the belly (11.7%), and low backache (2.9%). Therefore, it is crucial to clinically correlate specific situations and handle accordingly. In addition, a mucopurulent discharge is connected in other conditions like chlamydial and gonococcal infection but it is a rare cause of vaginal discharge and diagnosis requires special tests for diagnosis.

These findings are consistent with a research by Masand LT et al : in 11% of cases, no organisms were recovered, and Deshmukh A A et al (14%) cases. In 22(11%)cases, no harmful organisms were found. Since none of them displayed any accompanying symptoms, this might be physiological.

CONCLUSION:

One of the biggest public health issues is abnormal vaginal discharge, which has a negative impact on women's self-esteem, ability to work, frequency of hospital visits, and propensity for urethral syndrome, endometriosis, cuff cellulitis, pregnancy loss, preterm labour, among other conditions.

The Syndromic management strategy was created and promoted by the World Health Organization (WHO). This method is based on the identification of a generally continuous set of symptoms and signs (syndrome), as well as on knowledge of the most frequent organisms that cause these syndromes and their susceptibility to various types of antibiotics. The disadvantage of the syndromic strategy is overdiagnosis and overtreatment, as well as the cost and development of antibiotic resistance that goes along with these actions.

Therefore, it is crucial to make a microbiological diagnosis of

atypical vaginal discharge, particularly in cases when the patient is relapsing or not responding to traditional medication.

Therefore, it is crucial to promptly evaluate and treat irregular vaginal discharge in order to protect women from morbidity.

REFERENCES:

- Guntoory I, Tamaraba N R, Namburu L R. Prevalence and sociodemographic correlates of vaginal discharge among married women of reproductive age group at a teaching hospital. *Int J Reprod Contracept Obstet Gynecol.* 2017 Nov;6(11):4840-4846.
- Patel V, Weiss HA, Kirkwood BR, Pednekar S, Nevrekar P, Gupte S et al. Common genital complaints in women: the contribution of psychosocial and infectious factors in a population based cohort study in Goa; India. *Int J Epidemiol.* 2006;35:1478-85.
- Patel V, Pednekar S, Weiss H, Rodrigues M, Barros P, Nayak B et al. Why do women complain of vaginal discharge? A population survey of infectious and psychosocial risk factors in a South Asian community. *Int J Epidemiol.* 2005;34(4):853-862.
- Choudhary V, Kumar R, Agrawal VK, Singh A, Narula R, Sharma M. Prevalence and Determinants of Vaginal Discharge among Women of Reproductive Age Group in Tertiary Care Hospital of Northern India. *Natl J Community Med.* 2012;3(4):661-5.
- Kulkarni RN, Durge PM. A study of leucorrhoea in reproductive age group women of Nagpur city. *Indian J Public Health.* 2005;49(4):238-9.
- Masand DL, Patel J, Gupta S. Utility of microbiological profile of symptomatic vaginal discharge in rural women of reproductive age group. *J Clin Diagn Res.* 2015;9(3):QC04-QC07.
- Fox KK, Behets FM. Vaginal discharge. How to pinpoint the cause. *Postgrad Med.* 1995;98:87.
- Mohadani JW, Dekate RR, Shrikhande AV. Cytodiagnosis of discharge per vaginum. *Indian J Pathol Microbiol* 1998; 41: 403-411
- Kamara P Kong TH, Brathwaite A, et al. Vaginal infections in pregnant women in Jamaica : prevalence and risk factors. *Int STD and AIDS* 2000; 11 :516-520.
- Koumans EH, Sternberg M, Bruce C, McQuillan G, Kendrick J, Sutton M, et al. The prevalence of bacterial vaginosis in the United States, 2001-2004; associations with symptoms, sexual behaviors, and reproductive health. *Sex Transm Dis.* 2007;34:864-9.
- Pawanarkar J, Chopra K. Health and population – Prevalence of lower reproductive tract infection in infertile women. *Perspect Issues.* 2004;27:67-75.
- Malls N, Gupta I, Mahajan RC. Human Trichomoniasis. *Indian J Med Microbiol* 2001; 19:6-13
- N. Khan , R. Kausar , C. Flach & L. Howard (2012): Psychological and gynecological morbidity in women presenting with vaginal discharge in Pakistan, *International Journal of Culture and Mental Health*, 5:3, 169-181
- Venugopal S, Gopalan K, Devi A. Epidemiology and clinico-investigative study of organisms causing vaginal discharge. *Indian J. Sex. Transm. Dis. AIDS* 2017 ;38:1:69-75
- Lally P, van Jaarsveld CH, Potts HW, Wardle J. How are habits formed: Modelling habit formation in the real world. *Eur J Soc Psychol.* 2010;40:998-1009.
- Larsen B and Monif G R G. Understanding the Bacterial Flora of the Female Genital Tract. *J. Infect. Dis* 2001;32:e69-77