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Clinical Study of Abnormal Vaginal Discharge in Women of Reproductive Age Group at a Tertiary Hospital

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Abstract

Background: Abnormal vaginal discharge is among the most frequent gynaecological complaints encountered in clinical practice, especially among women of reproductive age. The etiology of abnormal vaginal discharge is broadly categorized into infectious and non-infectious causes. The major infectious causes include bacterial vaginosis (BV), vulvovaginal candidiasis (VVC), and trichomoniasis. Present study was aimed to study abnormal vaginal discharge in women of reproductive age group at a tertiary hospital. ***Material and Methods:*** Present study was hospital-based prospective observational study, conducted in sexually active women in age group 21 to 49 year with abnormal vaginal discharge. ***Results:*** The age distribution showed that most women with abnormal vaginal discharge belonged to the 26-35 years age group, constituting 69% of the study population. Type of residence had a moderate influence, with 54.5% urban and 45.5% rural participants Socio-demographic variables such as education and economic status played a significant role. Symptomatology was diverse, with vaginal itching (58.5%) being the most common symptom. The characteristics of vaginal discharge provided valuable diagnostic clues. White discharge was reported in 48% of cases, followed by curdy white (36%) and yellowish white (16%). Thick discharge consistency (47%) was most prevalent, consistent with fungal infections, particularly vulvovaginal candidiasis. Microbiological diagnosis revealed vulvovaginal candidiasis in 27%, bacterial vaginosis in 14%, and mixed infections in 2.5%, while 56% had no identifiable pathogen. Treatment was administered per syndromic guidelines. A majority (56%) were reassured with no specific therapy, indicating likely physiological or non-infective causes. Green Kit (29.5%) and metronidazole (14.5%) were used in symptomatic cases. At follow-up, 78% showed complete symptom resolution and 15% no relief,7% loss to follow up. ***Conclusion:*** Treatment based on definitive laboratory investigations allows for precise diagnosis and tailored therapy, thereby offering greater accuracy and efficacy compared to the syndromic approach which is primarily symptom-driven.

Keywords: Abnormal vaginal discharge reproductive-aged women, vulvovaginal candidiasis, bacterial vaginosis, KOH mount, wet mount, Gram stain.

INTRODUCTION

Abnormal vaginal discharge is among the most frequent gynaecological complaints encountered in clinical practice, especially among women of reproductive age. While vaginal discharge is a normal physiological process essential for maintaining vaginal homeostasis, acting as a defense mechanism by removing dead epithelial cells and microorganisms, it becomes abnormal when its colour, consistency, amount, or smell changes, often accompanied by symptoms such as itching, burning, pain, or discomfort during urination or intercourse. [1,2]

The prevalence of abnormal vaginal discharge varies globally due to differences in hygiene practices, access to healthcare, cultural norms, and sexual behaviors. According to the World Health Organization (WHO), more than one million sexually transmitted infections (STIs) are acquired every day worldwide, many of which manifest as abnormal vaginal discharge.[3] In India, studies have estimated that 30%-60% of women of reproductive age experience abnormal discharge at some point in their lives, with many cases going unreported due to stigma and lack of awareness.[4]

The etiology of abnormal vaginal discharge is broadly categorized into infectious and non-infectious causes. The major infectious causes include bacterial vaginosis (BV), vulvovaginal candidiasis (VVC), and trichomoniasis.[5] The burden of abnormal vaginal discharge extends beyond physical discomfort. It can lead to significant psychosocial stress, sexual dysfunction, pelvic inflammatory disease (PID), infertility, preterm labour, and neonatal infections if left untreated. [6] Therefore, timely identification and management are essential, not only for improving quality of life but also for preventing complications and transmission of infections. Present study was aimed to study abnormal vaginal discharge in women of reproductive age group at a tertiary hospital,

MATERIAL AND METHODS

Present study was hospital-based prospective observational study, conducted in department of Obstetrics and Gynaecology, at Government Medical College & hospital, Chhatrapati Sambhajinagar, Maharashtra, India. Study duration was of 2 years (March 2023 to February 2025). Study was approved by institutional ethical committee.

Inclusion Criteria

- All those cases of sexually active women in age group 21 to 49 year with abnormal vaginal discharge who willing to participate and give consent and willing for follow-up in present study

Exclusion Criteria

- Women with vaginal trauma
- Pregnant women
- Women who take OC pills therapy
- Women during menstrual cycle
- Post-menopausal women
- women who had taken antibiotic or vaginal medications in last 2 weeks
- Women not willing to participate
- Women who failed to complete follow-up

Study was explained to participants in local language & written informed consent was taken. A pre-structured proforma was used to collect demographic, personal (Age, parity, marital status, education level, occupation, socio-economic background, Menstrual, obstetric, contraceptive, and sexual history), detailed symptomatology (onset, duration, nature of discharge (amount, color, odor, consistency), and associated complaints like itching, burning, dysuria, pelvic pain, or dyspareunia, history of recent antibiotic use, genital hygiene practices, or co-morbidities like diabetes or immunosuppression.

A thorough general physical and systemic examination was conducted to assess overall health status. Per speculum examination to inspect the vagina and cervix for visible abnormalities and to assess the character of vaginal discharge (colour, odour, consistency, amount). Bimanual pelvic examination was done to rule out pelvic tenderness or masses.

All patients were managed based on syndromic approach guidelines recommended by the National AIDS Control Organisation (NACO). Treatment was provided using the appropriate color-coded kits as Kit 2 (Green) – for vaginal discharge (Tab. Secnidazole 2 g single dose, Tab. Fluconazole 150 mg single dose & Tab metronidazole 500mg BD for 7 days)

Patients were counselled regarding genital hygiene, partner treatment, abstaining from intercourse during treatment, and were provided written and verbal instructions.

Patients were followed up after one and four weeks' post-treatment. To evaluate clinical response to therapy, to assess for recurrent symptoms or treatment failure, to provide further counselling or repeat treatment if required. Non-responders were re-evaluated with additional laboratory investigations and treated accordingly.

All collected data were entered into Microsoft Excel and analysed using SPSS version 23. Descriptive statistics such as percentages, means, and standard deviations were used.

RESULTS

Among 200 subjects, majority of cases (33%) were between 26–30 years, followed by 21–25 years (23%) and 41–45 years (16%). Women in the 31–35 age groups each accounted for 13%, while those aged 36–40 years made up 14.5%. Only one participant was in the 46–49 years' group (0.5%). Out of 200 participants, 54.5% were from urban areas and 45.5% from rural settings. According to modified Kuppuswamy criteria women from the lower middle (31.5%) lower (26%) and upper lower (26%) classes formed the majority of the study population.

Comorbidities were present in 39% of the study population, with anemia (19%) being the most frequent, followed by hypothyroidism (8%), hypertension (6.5%), and diabetes mellitus (4.5%). HIV-positive status was reported in 1% of participants.

Table 1: General characteristics

Characteristics		No. of subjects	Percentage
Age group (in years)	21 - 25	46	23
	26 - 30	66	33
	31 - 35	26	13
	36 - 40	29	14.5
	41 - 45	32	16
	46 - 49	1	0.5
Residence Status	Urban	109	54.5
	Rural	91	45.5
Socio-economic Status	Lower	52	26
	Lower Middle	63	31.5
	Upper Lower	52	26
	Upper Middle	33	16.5
Co morbidity	Anemia	38	19
	Hypothyroidism	16	8
	Hypertension	13	6.5
	Diabetes Mellitus	9	4.5

Itching (58.5%) was most commonly observed symptom among many women's complaining of abnormal vaginal discharge, followed by foul smelling of vaginal discharge (28%), burning micturition (25%), pelvic discomfort (13.5%), dyspareunia (19%)

Table no 2: Symptomatology

Symptoms	No. of subjects	Percentage
Itching	117	58.5
Foul Smelling of Vaginal Discharge	52	28
Burning Micturition	50	25
Dyspareunia	38	19
Pelvic discomfort	27	13.5

Among 200 women presenting with abnormal vaginal discharge. IUCDs (Copper T) were the most commonly used method, adopted by 35% (70 participants).

Table 3: Distribution of Contraceptive Methods Among Study Participants

Contraceptive Method	No. of subjects	Percentage (%)
IUCD (Copper T)	70	35
Tubal Ligation (TL)	54	27
Barrier (Condoms)	46	23
No Contraceptive Used	30	15

Local Examination and per speculum Findings Most women (77%) showed no significant findings on local examination. Skin excoriation were noted in 12%. Vaginal wall edema (7.5%) and swelling over labia majora (3.5%) were relatively uncommon. The predominant discharge color was white (48%), followed by curdy white (36%) and yellowish-white (16%). Thick discharge was the most common (47%), followed by thin (36.5%) and watery (16.5%). Amount of Discharge Scanty discharge was more common (69.5%) than profuse (30.5%). Odor of Discharge Only 6% of participants reported a foul odor, whereas 94% had odorless discharge.

Table 4: Clinical characteristics

Characteristics		No. of subjects	Percentage
Local Examination And P/S Examination	Vaginal Swelling over labia majora	7	3.5
	Skin excoriation	24	12
	Vaginal Wall Edema	15	7.5
Colour of Vaginal Discharge	White	96	48
	Yellowish White	32	16
	Curdy White	72	36
Consistency of Discharge	Watery	33	16.5

Characteristics		No. of subjects	Percentage
	Thin	73	36.5
	Thick	94	47
Amount of Discharge	Profuse	61	30.5
	Scanty	139	69.5
Odour of Discharge	No	188	94
	Yes (Foul Smell)	12	6

KOH Mount Findings KOH mount revealed fungal elements in 7% of participants, while 0.5% had yeast with pseudohyphae, indicating candidiasis. The remaining 92.5% were negative. Wet mount microscopy was normal in 87.5% of cases. Budding yeast cells (4.5%) and pus cells (5.5%) were the most common abnormal findings. Gram Staining Findings Gram staining revealed gram-positive bacilli in 25.5% of cases and epithelial cells in 24%. Budding yeast (11%) and lactobacilli (18.5%) were also detected.

Table 5: Laboratory characteristics

Characteristics		No. of subjects	Percentage
KOH Mount	Yeast Cells with Psudohyphe	1	0.5
	Fungal	14	7
	No Cells	185	92.5
Wet Mount	No Cells	175	87.5
	Pus Cells	11	5.5
	Gram Bacilli	5	2.5
	Budding Yeast Cells	9	4.5
Gram Staining	Gram Bacilli + ve	51	25.5
	Gram Bacilli - ve/No Cells	50	
	Epithelial Cells	48	24
	Pus Cells	3	1.5
	Budding Yeast Cells	11	
	Lactobacilli	37	18.5

A normal microbiological profile was noted in 56% of women. Among infections, vulvovaginal candidiasis (27%) was most common, followed by bacterial vaginosis (14%) and mixed infections (2.5%). Only 0.5% had trichomoniasis.

Table No 6: Diagnosis

Diagnosis	Numbers	%
Normal	112	56
Vulvovaginal Candidiasis	54	27
Bacterial Vaginosis	28	14
Vulvovaginal Candidiasis with Bacteria	5	2.5
Trichomonas Vaginosis	1	0.5

Treatment Given Most patients (56%) received reassurance and no specific medication, indicating physiological or minor non-infective discharge. Others were treated with Green Kit (29.5%) for syndromic management of vaginal discharge and T. Metronidazole 500 mg (14.5%) for suspected anaerobic or protozoal infections.

Table No 7: Treatment

Treatment	Numbers	%
Green Kit	59	29.5
T Metro 500mg	29	14.5
Reassurance	112	56

At 1-month follow-up, 78% of patients reported complete resolution of symptoms However, 15% noted no improvement, and 7% were lost to follow-up.

Table No 8: Follow-Up Outcome at 1 Month

Follow-Up Outcome	Numbers	%
Complete Symptom Relief	156	78
No Improvement	30	15
Lost to Follow-Up	14	7

DISCUSSION

A prevalent health issue among women in the reproductive age group is vaginal discharge. Women frequently ignore it, whether it is severe or asymptomatic, which makes diagnosis more challenging. Epidemiological data over this is still limited in Indian scenario due to the scarcity of information and paucity of laboratory facilities. Social stigma, lack of knowledge, gender discrimination, unavailability of resources and many more reasons are the responsible factors for continuous increase in incidence of these infections.

In the present study, the majority of women with abnormal vaginal discharge were between 26–30 years (33%), followed by 21-25 years (23%) and 41-45 years (16%). These findings align with the known biological and social dynamics of the reproductive age group. Women aged 26-35 years typically experience peak estrogen levels, which increase glycogen content in vaginal epithelial cells. While this supports normal lactobacilli colonization, any disruption-due to poor hygiene, frequent sexual activity, use of intrauterine contraceptive devices (IUCDs), or postpartum changes-can predispose to infections like bacterial vaginosis and candidiasis.[7] Moreover, this age group often delays seeking timely care due to responsibilities like child-rearing and work obligations.

Comparable trends were observed in other Indian studies. Arthy *et al.,* [8] reported that 41.3% of symptomatic women belonged to the 26-35 years age group. Similarly, Gowthami *et al.,* [9] found that 37% of women presenting with RTI symptoms were between 25-34 years, supporting the vulnerability of this reproductive age band. The congruence across studies emphasizes the need for early screening, menstrual hygiene awareness, and reproductive health education targeted at women in their late twenties to mid-thirties.

In this study, the most frequently reported symptom was vaginal itching (58.5%), followed by foul-smelling discharge (26%), burning micturition (25%), and dyspareunia (19%). These symptoms often occurred in overlapping combinations, making it difficult to clinically distinguish between specific infections. Itching and curdy white discharge are classic signs of candidiasis, while malodor and thin greyish discharge typically point toward bacterial vaginosis (BV). Burning micturition may indicate a concurrent urinary tract infection or urethral irritation, and dyspareunia can be associated with vaginal or cervical inflammation. [7]

Similar symptom profiles have been reported in other Indian studies. Gowthami *et al.,*[9] found itching (64%) and foul discharge (24%) to be the most common symptoms in RTI cases. These overlapping and persistent symptoms highlight the difficulty of relying solely on clinical presentation and justify the syndromic approach in low-resource settings. [10]

However, syndromic management must be applied carefully. While it allows empirical treatment without waiting for laboratory results, it can also lead to over- or under-treatment, particularly in the presence of mixed or resistant infections. Therefore, detailed history-taking, clinical examination, and targeted laboratory investigations-even basic microscopy-should complement symptom-based diagnosis wherever possible.

The microbiological diagnosis in the present study revealed that vulvovaginal candidiasis (27%) was the most common infection, followed by bacterial vaginosis (14%), mixed infections (2.5%), and trichomoniasis (0.5%), while 56% of women had a normal microbiological profile. These findings confirm that fungal and bacterial etiologies remain the predominant causes of symptomatic vaginal discharge in reproductive-aged women. [10]

Mehta *et al.,*[11] reported that 29% of symptomatic women had vulvovaginal candidiasis, 18% had BV, and only 1% had trichomoniasis, closely mirroring the current study's proportions. Similarly, Deshmukh *et al.,* [12] identified candidiasis in 32% and BV in 16% of cases, with mixed infections also present in a small fraction. These consistencies highlight the importance of covering both fungal and bacterial causes in treatment regimens.

The relatively low incidence of trichomoniasis is consistent with national trends, although its high transmissibility and potential for complications necessitate screening even in asymptomatic individuals.[13] The fact that over half of the participants had no identifiable pathogen may be explained by physiological discharge, past partially treated infections, or limitations in diagnostic sensitivity.

Hence, while syndromic diagnosis remains a cornerstone of treatment in resource-limited settings, its accuracy is improved with support from basic laboratory tests such as Gram stain, KOH mount, and wet mount. Recurrent or unresolved cases should undergo microbiological confirmation to ensure tailored therapy and prevent chronic morbidity.

The laboratory findings in the present study provided a deeper insight into the etiology of abnormal vaginal discharge. KOH mount identified fungal elements in 7.5% of women (including 0.5% with pseudohyphae), wet mount showed budding yeast cells in 4.5%, and Gram staining detected Gram-positive bacilli in 25.5%, epithelial cells in 24%, and Lactobacilli in 18.5%. These results confirm the presence of fungal and bacterial infections and reinforce the need for basic laboratory evaluation alongside clinical diagnosis. [14,15]

Detection of pseudohyphae or budding yeast is strongly indicative of candidiasis, while Gram-negative bacilli and clue cells suggest bacterial vaginosis (BV). [4] The presence of Lactobacilli in some participants signifies a normal vaginal flora, essential for maintaining vaginal pH and defense. Although trichomonads were rarely observed in wet mounts (matching the low clinical prevalence), their detection, even in a small number, underscores the need for vigilance. [14,15]

These findings are similar to those reported in other Indian studies. Mehta *et al.,* [11] found fungal elements in 9% and Gram-positive bacilli in 23%, while Deshmukh *et al.,* [12] reported budding yeast in 5% and clue cells in 22% of symptomatic women. Together, these studies validate the utility of low-cost, rapid diagnostic techniques-like KOH and Gram staining-which enhance the diagnostic precision of syndromic management.

In the present study, 56% of women were managed with reassurance alone, indicating that a significant number had physiological or non-infective vaginal discharge. Among the symptomatic, 29.5% received Green Kit, and 14.5% were prescribed Metronidazole 500 mg, reflecting adherence to national syndromic management protocols. The Green Kit provides broad coverage for bacterial vaginosis and trichomoniasis, while metronidazole is effective against anaerobic and protozoal infections. [16]

This approach is consistent with WHO and national guidelines that recommend syndromic management in low-resource settings, where access to lab diagnostics may be limited.[10] However, syndromic treatment must be guided by a careful clinical history and examination, as inappropriate use of antibiotics or antifungals can contribute to resistance and recurrence.

Similar treatment trends have been reported in Indian studies. Mehta *et al.,* [11] showed that 60% of patients improved with syndromic kits, with candidiasis and BV managed effectively using standard regimens. Deshmukh *et al.,* [12] noted symptom resolution in 58% of cases using Green and Yellow Kits, emphasizing the practical utility of such standardized tools in primary care settings.

However, recurrent cases, treatment failures, or mixed infections may not respond well to single-line empirical therapy. Thus, periodic follow-up, counseling on genital hygiene, partner treatment, and referral for microbiological testing in unresolved cases remain key components of RTI management.

At the one-month follow-up in the present study, 78% of women reported complete symptom relief, 15% had no improvement, and 7% were lost to follow-up. These outcomes indicate that the syndromic management approach was largely effective, particularly when patients adhered to the prescribed treatment and follow-up protocols. [12,14]

Studies support that timely follow-up significantly enhances treatment outcomes. Mehta *et al.,* [11] reported a 62% complete symptom resolution rate at one month, highlighting the impact of patient counseling and adherence on recovery. Similarly, Sharma *et al.,* [17] observed 56% complete relief and emphasized that partner treatment, hygiene education, and patient motivation were crucial to achieving favorable outcomes.

To improve outcomes, structured follow-up mechanisms-such as reminder calls, community health worker visits, or integration with other reproductive services (antenatal care, contraceptive counselling) -can enhance adherence. Moreover, partner notification and treatment are often overlooked but are essential to prevent reinfection, especially in cases of sexually transmitted infections. Incorporating point-of-care testing and routine follow-up visits into primary care protocols can help identify treatment failures early and allow for therapy adjustment, thereby preventing chronicity and complications.

CONCLUSION

Abnormal vaginal discharge is a frequent gynecological complaint among reproductive-aged women, with significant implications for reproductive and sexual health. Women aged 26-35 were most affected, likely due to hormonal changes, sexual activity, and contraceptive use. Vulvovaginal candidiasis was the most common infection, followed by bacterial vaginosis and mixed infections. Microbiological tests, including KOH mount, wet mount, and Gram stain, improved diagnostic accuracy and treatment outcomes.

Most patients responded well to treatment based on national guidelines, though a subset showed persistent symptoms. Treatment based on definitive laboratory investigations allows for precise diagnosis and tailored therapy, thereby offering greater accuracy and efficacy compared to the syndromic approach which is primarily symptom-driven.

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