

A study of etiopathogenesis of vaginal discharge in a tertiary care hospital in North India

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Abstract *Objective* To study the etiopathogenesis of vaginal discharge among females of prepubertal, reproductive as well as post-menopausal age group.

Methods Total of 100 females attending dermatology OPD with chief complaint of vaginal discharge were enrolled in this study over a period of 2 years. A detailed history, clinical examination along with relevant laboratory tests was done.

Results The present study showed maximum incidence of bacterial vaginosis (44%) followed by vulvovaginal candidiasis (25%), non-specific discharge (14%), trichomoniasis (11%), gonorrhoea (6%). In our study, 87% patients were in the reproductive age group.

Conclusion The pattern of various causes of vaginal discharge observed in our study was comparable to other studies. This research emphasizes the need of identifying the definite etiology with appropriate laboratory assessment for early and specific treatment.

Key words

Bacterial vaginosis, gonorrhoea, trichomoniasis, vaginal discharge, vulvovaginal candidiasis.

Introduction

Vaginal discharge is a common presenting symptom among the females attending the dermatology outpatient clinic. In India, it represents a major public health problem but many women bear it silently. Reasons for not seeking medical advice can be innumerable ranging from social stigma, hesitation, ignorance and illiteracy. As a result of this stigma and shame many of these females resort to self-medication. Its impact on mental health and interference with routine activities is a matter of concern and hence need to be dealt properly.

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The present study was thus carried out to study various etiologies of vaginal discharge in females of all age groups presenting to the Dermatology Outpatient department in a tertiary care hospital in North India.

Methods

A total of 100 females in the age group of 5 years to 70 years who presented with the complaint of vaginal discharge to the outdoor patient department of dermatology, venereology and leprosy at a tertiary care hospital in North India, were included in the study. All relevant investigations including the blood counts and fasting blood sugar was done.

Inclusion criteria for the study were females with complaint of vaginal discharge of more than one month duration in the above defined

age group were included in this study. Pregnant females and patients who have already taken treatment in the form of antibiotics or antifungal drugs in the previous one month were excluded from the study.

After taking informed consent, detailed history with proper clinical examination was done. Photographs were taken for documentation. Local examination was done with Cusco's (Figure 1) speculum. Features of discharge were noted which included color, consistency, amount, odour of the discharge. The discharge was then collected from upper part of posterior fornix and lateral vaginal walls over a sterilized swab and 3 smears (Figure 2) were prepared from each swab specimen, agents used were:

1) Normal saline - for diagnosis of *Trichomonas vaginalis*. A drop of normal saline was added on to the slide. Slide was mounted with a cover slip and visualized under microscope for visualizing flagellate organism.

2) 10 % KOH - for bacterial vaginosis and *Candida albicans*. Whiff test (Amine test) was done for bacterial vaginosis. It is demonstrated by addition of 10% KOH on slide smeared with the discharge. Fishy odour is produced by the presence of amines which helps in the confirmation of the diagnosis. For *C. albicans*, presence of highly refractile, round or oval budding yeast cells on microscopic examination clinches the diagnosis.

3) Gram staining – for bacterial vaginosis and *Neisseria gonorrhoeae*. In case of *N. gonorrhoeae*, Gram-negative diplococci are seen with numerous inflammatory cells. For bacterial vaginosis, presence of clue cells (>20) is one of the diagnostic criteria (Amsel's criteria). Other



Figure 1 Cusco's speculum examination in a patient of bacterial vaginosis



Figure 2 Preparation of 3 smears from each swab for detailed examination



Figure 3 Candidal vaginal discharge

Table 1 Incidence of various causes of vaginal discharge among females of age group 5-70 years.

Cause	N (%)
Bacterial vaginosis	44 (44)
Vulvovaginal candidiasis	25 (25)
Trichomoniasis	11 (11)
Gonorrhea	6 (6)
Nonspecific discharge	14 (14)

criteria are: whitish-yellow discharge, pH > 4.5, positive Amine test.

Results

In our study, out of 100 women, 86 had infectious cause of discharge, remaining 14 patients had non-specific discharge (**Table 1**). Most common infection encountered was bacterial vaginosis seen in 44 females with incidence of 44%. Vulvovaginal candidiasis was seen in 25 (25%) patients, trichomoniasis in 11 (11%), gonorrhoea in 6 (6%). 87 patients (87%) belonged to reproductive age group. Among them, 77 females (77%) were married. Out of this, 2 females (3%) had multiple sexual partners. Incidence of discharge in prepubertal age group was 7% and 6% in postmenopausal group. In some patients, Gram stained smears showed only polymorphonuclear cells but no other finding, such patients were grouped under nonspecific vaginal discharge.

Most common symptom associated with discharge was pruritus, seen in 66% of the patients. Other than pruritus, burning micturition, dysuria, local irritation were also reported whereas 21% of the females were asymptomatic, their only complaint being profuse discharge. On further evaluation, 2% of the patients had lower abdominal pain and other signs of pelvic inflammatory disease. They were referred to gynecology OPD for further assessment. Another 7% of the patients had associated irregular menstruation and 1% had primary infertility. Such females were further evaluated for causes of infertility. 3% females

gave the history of intrauterine device (IUD) insertion and development of discomfort and foul smelling discharge after the procedure.

Females in prepubertal age group presented with white coloured or clear discharge associated with pain abdomen and burning micturition. No h/o sexual abuse could be elicited in any of these patients. Presence of foreign body was also ruled out. In majority of these patients, cause of discharge was nonspecific.

In above 40 years and postmenopausal females, vulvovaginal candidiasis (**Figure 3**) came out to be the common etiological agent. Such females were referred for PAP smear to rule out any malignancy.

Discussion

In our study, consultation rate for discharge was 27%. This was in contrast to study conducted by Singh where the reported rate was 59%.²

Observations showed 44% incidence of bacterial vaginosis, 25% vulvovaginal candidiasis, 11% trichomoniasis, 6% gonorrhoea and 14% nonspecific causes of discharge. The reported incidence of various causes in our study was comparable with that by Puri *et al.*³

The pattern of various causes of vaginal discharge observed in our study was comparable to various other studies done in this context. Majority of the previous studies, emphasized on vaginal discharge in reproductive age group only. Our study also focused on etiology of vaginal discharge in prepubertal and postmenopausal age groups.^{4,5}

Vaginal discharge can be physiological or pathological.^{6,7} Treating physician should be able to differentiate between the two so as to avoid unnecessary investigations and to burden the

patient with treatment. Physiological discharge varies with age and cyclical hormonal changes corresponding to the menstrual cycle depending mainly upon the proportion of progesterone and estrogen at a given point of time. Most of the females are able to perceive these subtle differences. It mainly comprises of secretions from Bartholin's, sebaceous, sweat and apocrine glands. Discharge is usually clear, odourless and non-irritant.

On the other hand, pathological discharge is usually symptomatic and may or may not be sexually transmitted. Non-sexually transmitted causes include bacterial vaginosis and vulvovaginal candidiasis whereas sexually transmitted causes mainly include infections due to *T. vaginalis*, *Chlamydia trachomatis*, *N. gonorrhoeae* and herpes simplex virus. Bacterial vaginosis is not sexually transmitted but it is commonly linked to sexual behavior. Local pathology in the cervix like erosion or polyp may also contribute to vaginal discharge.⁸ Imbalance between natural vaginal flora (lactobacillus) and pathogenic microorganisms can additionally contribute to the pathogenesis.

Many women resort to self-treatment. Use of over the counter drugs, can alter the microbiological flora further perpetuating the problem and making the diagnosis difficult. Therefore, it is important to examine the patient properly and to take help of various microbiological aids available.

Females presenting with bacterial vaginosis, mostly complain of yellowish color discharge with fishy odour. Whiff test (Amine test) helps in making diagnosis through ammonical odour (fishy odour). Presence of clue cells in microscopic examination is one of the diagnostic criteria. In our study, only 22 (42%) patients with bacterial vaginosis had positive Whiff test

and 42 (81.5%) patients were verified with Gram stain.

Vulvovaginal candidiasis was seen in 25% patients. Common presentation of vulvovaginal candidiasis is presence of thick white curdy discharge with pruritus. It is usually seen in association with other STDs. In this study, 10% KOH and gram staining aided in the demonstration of candidiasis.

The frequency of trichomoniasis was 11%. Females affected with trichomoniasis can be either asymptomatic or present with vulval itching and greenish frothy discharge. Vulval irritation was quite common. The lower incidence of trichomoniasis was comparable to the study conducted by Natranjan *et al.*⁹

In prepubertal girls, vaginal discharge was nonspecific in nature. This was comparable to the study done by Hayes *et al.*¹⁰ in which authors cited the most common cause of discharge being non-specific due to mixed flora, but still the importance of history of sexual abuse cannot be over emphasized. Most common pathogen seen in study done by Stricker *et al.*¹¹ was group A β -hemolytic streptococcus followed by *Hemophilus influenzae* type b. Use of local irritants like soaps, wipes and powders can lead to allergic reactions that can trigger discharge. Lack of anal and vaginal hygiene can be another contributory factor. This is particularly noteworthy in prepubertal females. Vaginal douching is also associated with increased incidence of bacterial vaginosis. Untreated vaginal discharge may lead to complications like, pelvic inflammatory disease, infertility etc.¹² These all contributory factors and complications should be kept in mind while treating the patient.

Conclusion

Vaginal discharge affects the mental and physical well-being of females who are struggling with this problem. The burden of reproductive tract infection morbidity is increasing at alarming rate. Identification of etiological factors can help in reducing the prevalence of these diseases and morbidity associated with them.

Timely management of vaginal discharge will help in reducing the complications associated with it. It is the lack of education that makes the patient ignorant about their disease. It's important to make them aware about symptoms, safe sexual practices and maintenance of proper hygiene. It will help in the reduction of transmission of HIV and other STDs.

This research emphasizes the association of different symptoms, age groups with discharge and highlights the need of identifying the definite etiology with appropriate laboratory assessment for early and specific treatment.

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