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Microbial evaluation of vaginal discharge in females from Bihar region

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Abstract
The associated symptoms produced by pathological discharge include itching, burning sensation, offensive odour and dyspareunia. The management of vaginal discharge is often based on syndromic approach. The main disadvantage of this approach is misdiagnosis and injudicious treatment with multiple antimicrobials leading to development of drug resistant strains and economic burden on the patient. Simple laboratory tests like gram staining, wet mount, whiff test etc can help in establishing the etiological agent and institution of the appropriate therapy. Hence based on the above literature findings the present study was planned to evaluate the abnormal vaginal discharge and the causative microbes responsible for it.
The present study was planned in Department of Microbiology, Mata Gujri Memorial Medical College and Lions Seva Kendra Hospital, Kishanganj Bihar from July 2000 to feb 2001. Total 50 adult females of aged 21 – 60 years observed with abnormal vaginal discharge were enrolled in the present study. The detailed data regarding the complaints, personal history, menstrual history, coexisting diabetes mellitus, use of drugs including oral contraceptive pills, antibiotics, antifungals, antiprotozoals in the recent past.
In our study bacterial vaginosis is the most common cause of symptomatic vaginal discharge followed by candidiasis and trichomoniasis. From the present study and the reported literature it can be concluded that abnormal vaginal discharge was decreased in the women who had good knowledge and who used good hygienic practices, in contrast, there was increase in the abnormal vaginal discharge in those women who had poor knowledge score, who didn't seek examination till they cannot tolerate the symptoms. Also the most ideal approach is microbiological diagnostic approach for etiological diagnosis of symptomatic vaginal discharge. This helps clinician to institute appropriate antimicrobial therapy to treat these conditions and prevent long term sequelea and also prevent the over treatment and development of resistance against various antibiotics.

Keywords: vaginal discharge, vaginitis, bacterial vaginosis, trichomoniasis, candidiasis, etc

Introduction
Vaginal discharge is a mixture of liquid, cells, and bacteria that lubricates and protects the vagina [1]. This mixture is constantly produced by the cells of the vagina and cervix and it exits the body through the vaginal opening. The composition, amount, and quality of discharge varies between individuals as well as through the various stages of sexual and reproductive development [2]. Normal vaginal discharge may have a thinner, watery consistency or a thick, sticky consistency, and may be clear or white in color [1]. Normal vaginal discharge may be large in volume but typically does not have a strong odour, nor is it typically associated with itching or pain [2]. While most discharge represents normal functioning of the body, some changes in discharge can reflect infection or other pathological processes [3, 4]. Infections that may cause changes in vaginal discharge include vaginal yeast infections, bacterial vaginosis, and sexually transmitted infections [5]. The characteristics of abnormal vaginal discharge vary depending on the cause, but common features include a change in color, a foul odour, and associated symptoms such as itching, burning, pelvic pain, or pain during sexual intercourse [6].
Normal vaginal discharge is composed of cervical mucus, vaginal fluid, shedding vaginal and cervical cells, and bacteria. The majority of the liquid in vaginal discharge is mucus produced by glands of the cervix [1]. The rest is made up of transudate from the vaginal walls and secretions from glands (Skene's and Bartholin's) [3]. The solid components are exfoliated epithelial cells from the vaginal wall and cervix as well as some of the bacteria that inhabit the vagina [1]. These bacteria that live in the vagina do not typically cause disease. In fact, they can protect the individual from other infectious and invasive bacteria by producing substances such as lactic acid and hydrogen peroxide that inhibit growth of other bacteria [5]. The normal composition of bacteria in the vagina (vaginal flora) can vary, but is most commonly dominated by lactobacilli [1]. On average, there are approximately 108 to 109 bacteria per milliliter of vaginal discharge [1, 3].
Normal vaginal discharge is clear, white, or off-white. The consistency can range from milky to clumpy, and odour typically mild to non-existent. The majority of the discharge pools in the deepest portion of the vagina (the posterior fornix) [2] and exits the body over the course of a day with the force of gravity [1, 3]. A typical reproductive-age woman produces 1.5 grams (half to one teaspoon) of vaginal discharge every day [1].
During sexual arousal and sexual intercourse, the amount of fluid in the vagina increases due to engorgement of blood vessels surrounding the vagina. This engorgement of blood vessels increases the volume of transudate from the vaginal walls. Transudate has a neutral pH, so increases in its production can temporarily shift vaginal pH to be more neutral. Semen has a basic pH and can neutralize the acidity of the vagina for up to 8 hrs.

The composition and amount of vaginal discharge changes as an individual goes through the various stages of sexual and reproductive development [3].

Abnormal discharge can occur in a number of conditions, including infections and imbalances in vaginal flora or pH. Abnormal vaginal discharge may also not have a known cause. In one study looking at women presenting to clinic with concerns about vaginal discharge or a foul smell in their vagina, it was found that 34% had bacterial vaginosis and 23% had vaginal candidiasis (yeast infection). 32% of patients were found to have sexually transmitted infections including Chlamydia, Gonorrhea, Trichomonas, or Genital Herpes [6]. Diagnosing the cause of abnormal vaginal discharge can be difficult, though a potassium hydroxide test or vaginal pH analysis may be used. When abnormal discharge occurs with burning, irritation, or itching on the vulva, it is called vaginitis [7]. The most common causes of pathological vaginal discharge in adolescents and adults are described below.

Bacterial vaginosis (BV) is an infection caused by a change in the vaginal flora, which refers to the community of organisms that live in the vagina. It is the most common cause of pathological vaginal discharge in women of childbearing age and accounts for 40–50% of cases. In BV, the vagina experiences a decrease in a bacterium called lactobacilli, and a relative increase in a multitude of anaerobic bacteria with the most predominant being Gardnerella vaginalis. This imbalance results in the characteristic vaginal discharge experienced by patients with BV. The discharge in BV has a characteristic strong fishy odour, which is caused by the relative increase in anaerobic bacteria [1]. The discharge is typically thin and grey, or occasionally green [8, 9]. It sometimes is accompanied by burning with urination. Itching is rare [10]. The exact reasons for the disruption of vaginal flora leading to BV are not fully known [11]. However, factors associated with BV include antibiotic use, unprotected sex, douching, and using an intrauterine device (IUD) [12]. The role of sex in BV is unknown, and BV is not considered an STI [8]. The diagnosis of BV is made by a health care provider based on the appearance of the discharge, discharge pH > 4.5, presence of clue cells under the microscope, and a characteristic fishy odour when the discharge is placed on a slide and combined with potassium hydroxide ("whiff test") [8, 9]. The gold standard for diagnosis is a gram stain showing a relative lack of lactobacilli and a polymicrobial array of gram negative rods, gram variable rods, and cocci. BV may be treated with oral or intravaginal antibiotics, or oral or intravaginal lactobacillus [13].

A vaginal yeast infection results from overgrowth of candida albicans, or yeast, in the vagina [14]. This is a relatively common infection, with over 75% of women having experienced at least one yeast infection at some point in their life [15]. Risk factors for yeast infections include recent antibiotic use, diabetes, immunosuppression, increased estrogen levels, and use of certain contraceptive devices including intrauterine devices, diaphragms, or sponges. It is not a sexually transmitted infection. Candida vaginal infections are common; an estimated 75% of women will have at least one yeast infection in their lifetime. Vaginal discharge is not always present in yeast infections, but when occurring it is typically odourless, thick, white, and clumpy. Vaginal itching is the most common symptom of candida vulvovaginitis. Women may also experience burning, soreness, irritation, pain during urination, or pain during sex [16]. The diagnosis of Candida vulvovaginitis is made by looking at a sample taken from the vagina under the microscope that shows hyphae (yeast), or from a culture [17]. It is important to note that the symptoms described above may be present in other vaginal infections, so microscopic diagnosis or culture is needed to confirm the diagnosis. Treatment is with intra-vaginal or oral anti-fungal medications [16].

Trichomonas vaginitis is an infection acquired through sex that is associated with vaginal discharge [14]. It can be transmitted by way of the penis to the vagina, the vagina to the penis, or from vagina to vagina. The discharge in Trichomonas is typically yellowish-green in color. It sometimes is frothy and can have a foul smell. Other symptoms may include vaginal burning or itching, pain with urination, or pain with sexual intercourse [18]. Trichomonas is diagnosed by looking at a sample of discharge under the microscope showing trichomonads moving on the slide. However, in women with trichomonas the organism is typically detected in only 60-80% of cases. Other testing, including a culture of the discharge or a PCR assay, are more likely to detect the organism. Treatment is with a onetime dose of oral antibiotics, most commonly metronidazole or tindazole [14].

Chlamydia and gonorrhea can also cause vaginal discharge, though more often than not these infections do not cause symptoms. The vaginal discharge in Chlamydia is typically pus-filled, but it is important to note that in around 80% of cases Chlamydia does not cause any discharge. Gonorrhea can also cause pus-filled vaginal discharge, but Gonorrhea is similarly asymptomatic in up to 50% of cases. If the vaginal discharge is accompanied by pelvic pain, this is suggestive of pelvic inflammatory disease (PID), a condition in which the bacteria have moved up the reproductive tract [19].

The associated symptoms produced by pathological discharge include itching, burning sensation, offensive odor and dyspareunia. The management of vaginal discharge is often based on syndromic approach. The main disadvantage of this approach is misdiagnosis and injudicious treatment with multiple antimicrobials leading to development of drug resistant strains and economic burden on the patient. Simple laboratory tests like gram staining, wet mount, whiff test etc can help in establishing the etiological agent and institution of the appropriate therapy. Hence based on the above literature findings the present study was planned to evaluate the abnormal vaginal discharge and the causative microbes responsible for it.

Methodology

The present study was planned in Department of Microbiology, Mata Gujri Memorial Medical College and Lions Seva Kendra Hospital, Kishanganj Bihar from July 2000 to feb 2001. Total 50 adult females of aged 21 – 60 years observed with abnormal vaginal discharge were enrolled in the present study. The detailed data regarding the complaints, personal history, menstrual history, coexisting diabetes mellitus, use of drugs including oral contraceptive pills, antibiotics, antifungals, antiprotozoals in the recent past.

All the patients were informed consents. The aim and the objective of the present study were conveyed to them. Approval of the institutional ethical committee was taken prior to conduct of this study.

Following was the inclusion and exclusion criteria for the present study.

Inclusion criteria: All the patients, clinically having the symptoms of vaginal discharge, were included in the study.

Exclusion criteria: Patients in menstrual period and patients who had taken antibiotics or received any treatment for vaginitis with in the previous month were excluded from this study.

Results & Discussion

The prevalence rate of vaginal discharge reported in the present study implies that every fourth woman suffers from vaginal discharge in the study area. More than half of the affected respondents in our study said that as a problem, vaginal discharge continuously nagged them. This way, it emerged as one of the commonest reproductive health problem of women. It is even accepted as an essential feature of womanhood as indicated by the statement made by most of our respondents that ' everyone has vaginal discharge'. Some of the respondents remarked, 'little vaginal discharge is there in every woman, so there is no need to worry much about it'. Such statements tend to give an impression of existence of a concept of normality regarding vaginal discharge among rural Indian women. Some of the women, in fact, said that it occurred normally in many women prior to menstrual bleeding indicating the onset of menses. In addition, many of the women, who did not consult anyone for vaginal discharge, told that they did so because they considered it normal.

Table 1: Age distribution

Age in years	No. of Cases
21 – 30 years	6
31 – 40 years	18
41 – 50 years	22
51 – 60 years	4
Total	50

Table 2: Etiology

Etiology	No. of Cases
Bacterial vaginosis	26
Candidiasis	18
Tricomoniasis	4
Mixed infection	2
Total	**50**

Table 3: Candida species isolated

Candida species	No. of Cases
C. albicans	9
C. tropicalis	4
C. parapsilosis	2
C. krusei	1
C. glabrata	2
Total	18

Candidial genital infection is the leading cause of fungal vulvo-vaginitis. Described important risk factors for Candida genital infection are pregnancy, broadspectrum antibiotic use, diabetes mellitus and immune – deficiency. However, asymptomatic microorganism colonization can occur in 25 to 50% of the cases [20, 22].

A study on data from the 1960's through to the 1990's demonstrated that there has been a decrease in the frequency of cervicovaginal infection due to Trichomonas vaginalis and an increase in vulvovaginatis due to Candida species especially over the last decade [23]. Vulvovaginitiis an important public health problem, not only due to the gynecological and obstetric complications associated with it but also because the inflammation of the vaginal mucosa and the reduction of lactobacilli could facilitate the transmission of STDs, especially HIV infection. [20, 21] The results obtained demonstrated the high prevalence of genital candidiasis followed by bacterial vaginosis in RTI clinic attendees. These conditions if undiagnosed or untreated may lead to major obstetric and gyneacological complication which considerably increase treatment cost and hospitalization. Also have a negative impact on female mortality rates.

Concerning to the knowledge about vaginal discharge, more than half of the women had bad knowledge score, more than one third had fair knowledge score and only two percent of them had good knowledge score level, this result was in the agreement of Li *et al*., [24] who conducted a descriptive study among rural women in China aimed to assess knowledge, practice, and prevalence of reproductive tract infection, they assured that the level of knowledge regarding reproductive tract infection was very low among the studied group.

In the same line, Dube & Sharma [25] conducted a comparative study to evaluate the knowledge, attitude and practice regarding reproductive health among urban and rural girls in India, the study was carried out with the aim to assess the level of awareness towards reproductive health. The results revealed that there was decrease of basic awareness regarding reproductive health and the majority of the respondents had a lot of ignorance. Also, the study findings was in agreement with Suja & Aruna [26] who assured in their descriptive study about the knowledge on reproductive tract infection among married women at India that 64% of the studied group had inadequate knowledge on reproductive tract infection. Also the study findings was in agreement with Mohamed *et al* [27] who conducted a descriptive study to evaluate the health practices of respondents regarding to the prevention of the genital tract infection in Benha University, Egypt, they assured in their study that the most of the students had unsatisfactory knowledge score level about genital tract infection.

Concerning to seeking medical examination, two thirds of the women sought medical examination when complained of abnormal vaginal discharge. The most prominent causes for seeking medical examination were fear from serious diseases among one third of them and inability to tolerate the abnormal symptoms among more than quarter of them. On the other hand, one third of the studied group did not seek medical advice when they had complained of abnormal vaginal discharge, more than one third of them didn't seek examination because they considered that the abnormal vaginal discharge as simple problem and there was no need for examination, others; more than one third of them were not examined because they feel shyness from reveal the genitalia.

Although these studies regarding vaginal discharge and reproductive tract infection from different countries in the world, the results showed that the complaint of vaginal discharge is very common. This may be due to poor access to health care, poor knowledge and some of reproductive tract infection are asymptomatic are responsible for increased prevalence of genital tract infection. These indicate that there is strong need for increase awareness of

the communities all over the world about the reproductive health.

Conclusion

In our study bacterial vaginosis is the most common cause of symptomatic vaginal discharge followed by candidiasis and trichomoniasis. From the present study and the reported literature it can be concluded that abnormal vaginal discharge was decreased in the women who had good knowledge and who used good hygienic practices, in contrast, there was increase in the abnormal vaginal discharge in those women who had poor knowledge score, who didn't seek examination till they cannot tolerate the symptoms. Also the most ideal approach is microbiological diagnostic approach for etiological diagnosis of symptomatic vaginal discharge. This helps clinician to institute appropriate antimicrobial therapy to treat these conditions and prevent long term sequelea and also prevent the over treatment and development of resistance against various antibiotics.

References

1. Beckmann RB. Obstetrics and Gynecology (7th ed.). Baltimore, MD: Lippincott Williams & Wilkins, 1999, p. 260. ISBN 9781451144314.
2. Hacker Neville F. Hacker & Moore's Essentials of Obstetrics and Gynecology (6th ed.). Philadelphia, PA: Elsevier, 1995, p. 276. ISBN 9781455775583.
3. Lentz Gretchen M. Comprehensive Gynecology (6th ed.). Philadelphia PA Elsevier, 2012, 532-533. ISBN 9780323069861.
4. LeBlond, Richard F. Chapter 11. DeGowin's Diagnostic Examination (10th ed.). McGraw-Hill Education, 1996, ISBN 9780071814478.
5. Rice, Alexandra Vaginal Discharge. Obstetrics, Gynaecology & Reproductive Medicine. 2016; 26(11):317-323.
6. Wathne Bjarne. Holst Elisabeth. Hovelius Birgitta, Mårdh Per-Anders. Vaginal discharge - comparison of clinical, laboratory and microbiological findings. Acta Obstetricia et Gynecologica Scandinavica. 1994; 73(10):802-808. Doi: 10.3109/00016349409072509. ISSN 0001-6349.
7. Hoffman Barbara, Schorge John, Schaffer Joseph, Halvorson Lisa, Bradshaw Karen. Cunningham F. *et al*. Williams Gynecology, Second Edition. McGraw Hill Professional, 1998. ISBN 9780071716727.
8. Alan H DeCherney. Current diagnosis & treatment: obstetrics & gynecology (11th ed.). Stamford, Conn.: Appleton & Lange, 2012. ISBN 978-0071638562.
9. Keane F, Ison CA, Noble H, Estcourt C. Bacterial vaginosis. Sex Transm Infect. 2006; 82(4):16-8. doi:10.1136/sti.2000.023119. PMC 2563898. PMID 17151045.
10. "What are the symptoms of bacterial vaginosis? www. nichd. nih. gov. STD Facts - Bacterial Vaginosis". www.cdc.gov, 2000, 01-11.
11. What causes bacterial vaginosis (BV)? www.nichd.nih.gov.
12. Oduyebo Oyinlola O. Anorlu Rose I, Ogunsola, Folasade T. The effects of antimicrobial treatment on bacterial vaginosis in non-pregnant women | Cochrane". Cochrane Database of Systematic Reviews, 2000, (3): CD006055.
13. Usatine R, Smith MA, Mayeaux EJ, Chumley H. Color Atlas of Family Medicine (2nd ed.). New York McGraw Hill. ISBN 978-0071769648.
14. Genital / vulvovaginal candidiasis (VVC) | Fungal Diseases | CDC". Www. cdc. gov. Retrieved, 2000, 12-16.
15. Barry L Hainer, Maria V Gibson. Vaginitis: Diagnosis and Treatment - American Family Physician. American Family Physician. 2011; 83(7):807-815.
16. Vulvovaginal Candidiasis–2000 STD Treatment Guidelines". Www. cdc. Gov, 2000, 01-11.
17. STD Facts-Trichomoniasis. Www. cdc. gov. Retrieved, 2016, 12-04.
18. Spence, Des Melville, Catriona. Vaginal discharge. BMJ British Medical Journal. 1998; 335(7630):1147-1151. Doi: 10.1136/bmj.39378.633287.80. ISSN 0959-8138. PMC 2099568. PMID 18048541.
19. Syed TS, Braverman PK. Vaginitis in adolescents. Adolescent Medicine Clinics. 2200; 15(2):235-51.
20. Geiger AM, Foxman B, Gillespie BW. The epidemiology of vulvovaginal candidiasis among university students. American Journal of Public Health. 1995; 85(8):1146-48.
21. Trama JP, Adelson ME, Raphaelli I, Stemmer SM, Mordechai E. Detection of Candida species in vaginal samples in a clinical laboratory setting. Infectious Diseases in Obstetrics and Gynecology. 1995; 13(2):63-67.
22. Adad SJ, de Lima RV, Sawan ZT. Frequency of Trichomoanas vaginalis, Candida sp. and Gardnerella vaginalis in cervical-vaginal smears in four different decades. Sao Paulo Med J. 2060; 119(6):200-5.
23. Li C. knowledge, behavior and prevalence of reproductive tract infection a descriptive study on rural women in Hunchun, China. Asian Nursing Research. 2010; 4(3):122-129.
24. Dube S, Sharma K. Knowledge, Attitude and Practice Regarding Reproductive Health among Urban and Rural Girls: A Comparative Study, Ethno Med. 1999; 6(2):85-94.
25. Suja B, Aruna S. Knowledge on Reproductive tract infection among married women at selected rural area-a descriptive study, Internal Journal of Comprehensive Nursing, 1994, 1(1).
26. Mahmood KT, Farheen Z. Farah S, Marium Z, Fatma A. causes and management of pathological vaginal discharge, journal of pharmaceutical science and technology. 2011; 3(1):448-455.