

MICROBIOLOGICAL STUDY OF ABNORMAL VAGINAL DISCHARGE AND THEIR ANTIMICROBIAL SUSCEPTIBILITY PATTERN IN WOMEN OF REPRODUCTIVE AGE



Microbiology

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ABSTRACT

Background: vaginal discharge is one of the common reason for gynaecological consultation. The common infectious causes of vaginitis include anaerobic bacteria causing Bacterial vaginosis, Vulvovaginal candidiasis and Trichomonas vaginalis. **Aim:** To study the microbiological profile of abnormal vaginal discharge in women of reproductive age group and their antimicrobial susceptibility pattern. **Objective:** To study the prevalence of organisms causing abnormal vaginal discharge and their antimicrobial susceptibility testing. **Method:** A total of 100 women of reproductive age complaining of abnormal vaginal discharge were included in the study. Two high vaginal swabs were collected. One swab used for wet mount, Gram's stain and other used for culture. **Results:** prevalence of vulvovaginal candidiasis was higher 28(50%) followed by aerobic vaginitis 27(48.2%) followed by bacterial vaginosis 1(1.78%). **Conclusion:** In the present study common cause of abnormal vaginal discharge is vulvovaginal candidiasis followed by aerobic vaginitis.

KEYWORDS

vaginal discharge, vulvovaginal candidiasis, aerobic vaginitis

INTRODUCTION:

Reproductive tract infections are major public health problems among women especially in developing countries. Vaginal discharge is one of the common reasons for gynecological consultation.² Discharge may be physiological or pathological.

Physiological Discharge:

Physiological discharge is made up of mucoid secretions from endocervical cells, sloughed epithelial cells, and products from normal flora of vagina

Pathological Discharge:

Discharge is usually caused by infection and causative organisms may or may not be sexually transmitted. Symptomatic vaginal discharge is due to inflammation because of infection of mucosa of vagina.³

The common infectious causes of vaginitis include anaerobic bacteria causing Bacterial vaginosis, Vulvovaginal candidiasis and Trichomonas vaginalis.³ Aerobic vaginitis is recently proposed term for genital tract infection in women.⁴ vulvo vaginal Candidiasis is the most common vaginal infection in most of the countries affecting approximately 50-72% of women.⁴ Candida albicans is isolated most commonly but recently non-albicans Candida species have been recovered with increasing frequency, which were known for variable resistance of azoles.⁵

AIMS AND OBJECTIVES:

The aim is to study the microbiological profile of abnormal vaginal discharge and their antimicrobial susceptibility pattern in women of reproductive age group.

Objectives:

1. To study the prevalence of organisms isolated from abnormal vaginal discharge
2. To evaluate antimicrobial susceptibility pattern of all the isolates

MATERIALS AND METHODS:

The present study was conducted in the microbiology department SVMC, Tirupati. A total of 100 patients complaining of vaginal discharge were studied from March 2019 to August 2019. These samples were taken from the Government maternity hospital, Tirupati.

Inclusion Criteria

1. The reproductive age group with complaints of abnormal vaginal

discharge (married women).

Exclusion Criteria

1. Patients who underwent cervical biopsy or operation.
2. Pregnant women

Sample Collection:

History was taken from all the patients complaining of abnormal vaginal discharge with particular reference to name, age, address, OPD no, onset and duration of complaints and treatment taken. The amount, colour, character and smell of vaginal discharge were noted. Two sterile swabs were used for collection of discharge from lateral and posterior vaginal walls. One swab is used for wet mount, Gram stain and second is used for culture.

Processing Of Bacterial Pathogens:

Saline wet mount:

Normal saline wet mount preparation was examined for the presence of motile pear shaped trichomonas, clue cells and pus cells.

Gram stain:

presence of Gram positive and Gram negative bacteria, presence of yeast cells and hyphae, squamous epithelial cells like clue cells.

Whiff's test (Amine test) for bacterial vaginosis:

presence of fishy odour by addition of 2 drops of 10% KOH to vaginal discharge indicates bacterial vaginosis.

Culture:

specimen is inoculated on blood agar and macConkey agar. Specific identification of bacterial isolate was done by microscopic characteristics and biochemical properties. Antimicrobial susceptibility testing done for all bacterial isolates by Kirby-bauer disk diffusion method.

Processing fungal pathogen:

10% KOH preparation:

one drop of KOH was added to the drop of vaginal secretions and examined for budding yeast cells with or without pseudohyphae.

Culture:

The specimen was inoculated on to SDA and candida differential CHROM agar.

Antifungal susceptibility testing was performed on all *Candida* isolates by modified Kirby Beuer disk diffusion method as per CLSI guidelines. Muller-Hinton agar supplemented with 2% glucose and methylene blue were subjected to susceptibility testing for following antifungals; Fluconazole 10µg and voriconazole 1µg.

RESULTS

In the present study includes 100 patients complaining of abnormal vaginal discharge in reproductive age group 19-49 years. Abnormal vaginal discharge is most commonly seen in 19-29 age group 53%. Pathogens were isolated from 56 patients. Among them the prevalence of vulvovaginal candidiasis was higher 28(50%) followed by aerobic vaginitis 27(48.2%) followed by bacterial vaginosis 1(1.78%). However trichomonas was not isolated. Among 28 candidal isolates 9(32.14%) were *Candida albicans* followed by *Candida krusei* 11(39.25%), *Candida glabrata* 7(25%) and *Candida tropicalis* 1(3.57%). Among 27(48%) aerobic vaginitis 8 (29.62%) were *E.coli* followed by *Klebsiella pneumoniae* 7(25.92%), *Staphylococcus aureus* 7(25.92%), *Acinetobacter baumannii* 3 (11.11%), *Proteus mirabilis* 1 (3.7%) and *Citrobacter koseri* 1 (3.7%).

Antifungal resistance pattern of *Candida* species shown the highest resistance towards fluconazole (57.14%) and least resistance to voriconazole (17.85%).

In the present study, the Gram-positive organism isolated was *staphylococcus aureus* only. They showed the sensitivity of 100% to vancomycin, 71.42 % to oxacillin, 28.57% to amoxycylav and 14.28% to cotrimoxazole. They showed 100% resistance to ceftriaxone.

Antibiotic resistance pattern of gram-negative bacilli shown highest resistance towards amoxycylav (95%) followed in order of ceftriaxone (85%), cotrimoxazole (80%), ceftazidime (70%), amikacin (50%), levofloxacin (45%), imipenem (40%) and piperacillin-tazobactam (20%).

DISCUSSION

In the present study majority of patients were in the age group of 19-29 years. Similar results were reported by Vaidehi J. Mehta et al. Mumtaz S et al. Chaudhary V et al. Afroze et al. and Mahakal N et al.

In the present study among 28 candidal isolates 9(32.14%) were *Candida albicans* followed by *Candida krusei* 11(39.25%), *Candida glabrata* 7(25%) and *Candida tropicalis* 1 (3.57%). Non albicans candida shown higher prevalence than *candida albicans*. Similar result were reported by Lavanya V et al. G. Sasikala et al. Anna Cherian et al. Sneha kakanur et al. Samal R et al. Kandati Jithendra et al.

In the present study among 27(48%) aerobic vaginitis the highest were *E.coli* 8 (29.62%) followed by *Klebsiella pneumoniae* 7(25.92%), *Staphylococcus aureus* 7 (25.92%), *Acinetobacter baumannii* 3 (11.11%), *Proteus mirabilis* 1 (3.7%) and *Citrobacter koseri* 1 (3.7%). The results of our study was comparable to the study done by K.Lakshmi, et al. Nagalakshmi et al. Rahman et al. Gopalan U et al. who found that *E. Coli*, *Staphylococcus aureus*, *Klebsiella pneumoniae* were the most common bacterial isolated.

Antifungal resistance pattern of *Candida* species shown the highest resistance towards fluconazole (57.14%) and least resistance towards voriconazole (17.85%). Similar results were reported by Videhi Mehta et al. Vijaya D et al.

Overall antibiotic resistance pattern of gram-negative bacilli shown highest resistance towards amoxycylav (95%) followed in order of ceftriaxone (85%), cotrimoxazole (80%), ceftazidime (70%), amikacin (50%), levofloxacin (45%), imipenem (40%) and piperacillin-tazobactam (20%).

The results of piperacillin-Tazobactam were comparable with Videhi J Mehta et al. cotrimoxazole results were comparable with sneha kakanur et al.

CONCLUSION

This study conclude that aerobic bacteria and candida species are the most commonly found etiological agents in abnormal vaginal discharge among reproductive age group women. The common practice of empirically treating all patients of suspected vaginitis with oral or vaginal pessaries is not a rational approach. Due to changing

microbiological profile of infection and sensitivity of microorganisms and emergence of beta-lactamase and methicillin resistance and resistance to azole group of drugs in non-albicans is a major problem through out the world in various clinical infections including Gynecological infections. Early diagnosis will help to plan accurate, appropriate and effective therapy.

REFERENCES

1. Sangeetha S Balamurugan, ND Bendigeri, Community based study of reproductive tract infections among women of the reproductive age group in the Urban Health training area in Hubli, Karnataka. Indian Journal of Community medicine. Vol 37: Issue 1: January 2012.
2. Farhan AM, Eldesouky EA, Gaballah EA, Soltan ME. Comparison of visual, clinical, and microbiological diagnosis of symptomatic vaginal discharge in the reproductive age group. Benha Med J 2017;34:43-8
3. Shivaranjani R, Jaisankar TJ, Thappa DM, Kumari R, Chandrasekhar L, Malathi M et al. spectrum of vaginal discharge in a tertiary care setting. Trop parasitol. 2013;3:135-9
4. Zhang T, Xue, Yue et al. characteristics of aerobic vaginitis among women in Xi'an district: a hospital-based study. BMC women's health 20,138(2020).
5. Soble J vaginitis, vulvitis, cervicitis and cutaneous vulval lesions. In : Cohen J, Powderly WG. Editors. Infectious diseases. 2nd ED. Spain: Elsevier Ltd.:2004. P.683-91
6. Neerja J, Aruna A, Paranjee G significance of candida culture in women with vulvovaginal symptoms. J. Obstet Gynecol India. 2006;56:139-41
7. Vijaya D, Harsha TR, Nagarathnamma T. Candida speciation using chrom agar. J Clin Diagn Res 2011; 5:755-7
8. Machande V, Agarwal S, Verma N, Yeast identification in routine Clinical microbiology laboratory and its clinical reference. Indian Journal of Medical Microbiology. 2011;29(2):172-7.