Prevalence of Vaginal Infections in Women of Reproductive Age Group

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ABSTRACT
The present study aimed to know the prevalence of vaginal infections in reproductive age group women coming to tertiary centre and determine the cause of vaginal infections and various factors associated with it. 100 married, sexually active women in the reproductive age group (20-45) years attending the Gynecology outpatient complaining of abnormal vaginal discharge were included in the study. Two vaginal swabs were collected from each patient and were subjected for investigation. Along with discharge, symptoms such as malodour of discharge, dyspareunia, UTI, pruritis were also noted. In present study, prevalence of vaginal infections was found to be 88%. The prevalence also varied among different age groups with highest among the age group of 30-35 years. In the current study, distribution of organisms in the disease positive showed that the highest number of infections ate caused by bacterial vaginosis followed by candida, Trichomonas vaginaklis, gonorrhoea, stated in the order of their prevalence. It is observed that in few cases, infections are caused by >one organism. In patients who are disease positive for vaginal infections malodour and pruritis vulva was significant. UTI was present in 35% of the disease positive patients. The correlation of vaginal infections with diabetes was found insignificant in the present study. Clinical implications suggest significant prevalence of infections, there is strong need to conduct studies similarly in other centers as well as they will help to formulate better treatment strategies based on the prevalence of vaginal infections.

INTRODUCTION

In healthy women, Doderlein's bacillus is present in the upper two-thirds of vagina. It's presence is associated with production of lactic acid[1]. which inhibits the growth of other organisms. Alteration in the balance of vaginal flora can lead to infections. Vaginal infection is most common gynaecological problem in women especially in reproductive age group and might lead to significant risk of morbidity. The management of vaginitis remains largely empirical though establishing correct diagnosis by laboratory techniques is required for specific treatment. Vaginitis is characterized by symptoms such as vaginal discharge, pruritis, burning micturition, dyspareunia. The prevalence of infectious causes which are considered as the main cause of vaginal discharge namely Bacterial vaginosis, Candidisais, Trichomnas vaginalis, Gonnorhea and association with factors such as altered menstrual status, hormonal changes, sexual activity, contraceptive usage, personal hygiene is being evaluated. Reproductive age group women complaining about vaginal discharge as a symptom is very common occurrence[1,2]. It leads them to constant distress and apprehension and it is rightly a reason to be worried about, as it can be an alarming sign of occult infections. Despite the serious probable complications women still undergo self-treatment and delayed doctor consultation due to social stigma and embarrassment as they assume that the vaginal infections is due to sexual transmission. Infections secondary to sexual transmission is considered taboo and also risk factors like multiple sexual partners[2] is common cause for the incidence of recurrent bacterial vaginosis[3]. Along with this taboo and nonscientific belief, there is severe shortage of facilities like tertiary Centre and inadequate diagnostic facilities and sophisticated techniques. Hence it is challenging to diagnose, evaluate and treat vaginal infections[4,5]. It necessitates understanding of prevalence and risk factors of the infections like multiple sexual partners usage of contraception and personal unhygienic practices and their manifestations in detail because some organisms are believed to create favourable environment suitable for simultaneous occurrences of the infections like the Bacterial vaginosis indicates to be a strong predictor of Neisseria and Chlamydia trachomatis infections and even Trichomonas vaginalis[6]. Hence syndromic approach was promoted by WHO[7-9]. This approach is predominantly based on diagnosing infections relying on their most consistent symptoms, clinical signs like vaginal discharge[7], pruritis and others, thus promoting the awareness of the diseases and infective organisms along with their antibiotic sensitivity and resistance patterns[10]. This syndromic approach helps in early diagnosis and treatment with antibiotics such as metronidazole and other empirical antibiotics which subsequently reduce the morbidity.

MATERIALS AND METHODS

Type of the Study: Observational study.

Sample Size: 100

100 married, sexually active women in the reproductive age group (20-45) years attending the Gynecology outpatient complaining of abnormal vaginal discharge were included in the study. Vaginal discharge was classified as abnormal if patients referred to it as the main reason for attending at clinic. Detailed history was taken with special reference to the duration, nature, odor of the vaginal discharge and associated vulval itching, lower abdominal pain dysuria, dyspareunia. History of diabetes, prolonged antibiotic use, oral contraceptive use, any symptoms in husband were also noted. A speculum examination was performed on each patient, The nature and colour of the discharge was noted. Two high vaginal swabs has been taken from each patient using sterile cotton wool. Vaginal swabs by rubbing and rotating in the posterior vaginal fornix. One swab is used immediately to prepare wet mount by adding one or two drops of normal saline upon a glass slide. Light microscopy is used to observe the jerky or darting motility of Trichomanas vaginalis. The other swab is sent to the microbiology lab for Gram staining and reporting.

- Bacterial vaginosis was diagnosed by Gram stain using Nugent's criteria.
- Candidiasis by Gram stain showing budding yeast cells and pseudohyphae.
- Trichomoniasis by wet mount showing motility of trophozoites.
- **Nugent's Scoring:** This is based on Gram staining of the vaginal secretions of the patient.

Inclusion Criteria: Sexually active women in the reproductive age group (20-45)years attending the Gynecology outpatient department complaining of abnormal vaginal discharge and associated complaints including dysuria, dyspareunia, pruritis were included in the study.

Exclusion Criteria: Patients with bleeding per vaginum, pregnancy, postpartum, postmenopausal, post hysterectomy status, those with known genital tract malignancies, those who had taken topical/oral antifungals/antimicrobials in the past one month had been excluded from the study.

Method: Number of organisms visualized per high power field in microscope 20 after Gram staining the vaginal smear. The advantage of this scoring system is it has low inter-observer variability and high reproductivity. Hence it is mostly used for research purposes. Lactobacilli morphocyte-large gram positive rods. Gardnerella morphocyte -small gram negative /gram variable rods Mobiluncus morphocyte- curved gram negative to gram variable rods .

RESULTS AND DISCUSSIONS

This study has been done over a period of 18 months and concluded with 100 samples. Among the 100 cases 88 patients were positive for infections and no infectious cause was identified among 12 patients. The most common age group of patients of present study was >25-<=30 years and >40-45 years, both the age group had 28 patients in each. The mean age of the study population was observed to be 33.51 years with a standard deviation of 7.08 years. Highest prevalence of complaints of discharge per vaginum was seen among age group >30-<=35. About 85% of the study population in the age group of >30-<=35 had complaints of discharge. Least prevalence of discharge was seen in age group between 20 and 25. Among the 88 cases that turned out to be positive for culture, bacterial vaginosis alone was seen among 33 patients followed by candidial infection among 25 patients.

Table 1. Distribution of Organisms in the Study Population

Organisms	No of cases
BV alone	33
TV alone	12
Candida	25
Gonorrhoea	6
BV+CV	3
BV+TV	6
BV+G	0
CV+TV	2
CV+G	0
TV+G	1

Bacterial vaginosis was seen the highest among 25-30 age group followed by 40-45. Bacterial vaginosis prevalence was higher among 25-30 age group with a prevalence of 50% among the study subjects followed by 20-25 age group with 45.5% of the study population showing positive for bacterial vaginosis. The difference in presence of bacterial vaginosis between different groups was statistically not significant with a chi square value of 3.26 and a p value of 0.515. Bacterial vaginitis was the most common cause of vaginal infection in the study population with 42 patients positive for bacterial vaginosis. Candida was observed to be positive among 30 patients. Candida was seen the highest in the 35-40 age group. The prevalence of candida has been highest in the 35-40 age groups too. Trichomonas infection was seen the highest in the 25-30 years group, also the prevalence of Trichomonas vaginalis was next highest among 35-40 years. Gonorrhoea was seen most commonly in the 25-30 age group. Vaginal discharge: Out of 100 study samples, vaginal discharge was seen among 68 patients (68%) of the study population. Out of the 68 patients, disease positive was seen among 60 patients (88.2%) and among the other 32, 28 patients were positive for one of other organism causing vaginal infection.

Out of 100 study samples, vaginal discharge was seen among 68 patients (68%) of the study population. Out of the 68 patients, 39 patients(57.3%) had findings of mal odor. Candida infection was seen significant higher in patients with vaginal discharge associated with mal odour compared to patients with vaginal discharge without mal odour. The difference was highly significant with a fisher exact p value of 0.002. Gonorrhea was observed higher in patients with discharge not associated with mal odour, but the difference was deemed insignificant with a fisher's exact p value of 0.073. Urinary Tract Infection: Out of 100 study samples, UTI was seen among 35 patients (35%) of the study population. Out of the 35 patients, disease positive was seen among 31 patients (88.6%) and among the other 65 patients who did not show any sign and symptoms of urinary tract infections, 57 patients were positive for one of other organism causing vaginal infection.

Pruritis: Out of 100 study samples, 48 patients (48%) of the study population had complaints of pruritis vulva. Out of the 48 patients, disease positive was seen among 45 patients (93.8%) and among the other 52 patients who did not complaint of symptoms of pruritis vulva, 43 patients were positive for one of other organism causing vaginal infection.

Diabetic Status: Out of 100 study samples, 39 patients (39%) of the study population were diabetic. Out of the 39 patients, disease positive was seen among 33 patients (84.6%) and among the other 61 patients who were not diabetic, 55 patients were positive for one of other organism causing vaginal infection.

Martial Status: Of the 12 unmarried study samples 1 of them (8.3%) showed to be positive for >one organism. The prevalence of mixed infection was almost the same in the married group, with 88 married patients in the study, 11 patients (12.5%) were positive for more than one organism. The difference between the prevalence of mixed infection based on marital status.

Vaginal Discharge: Of the 68 patients with vaginal discharge, 10 were positive for more than one organism. The prevalence of mixed infection among vaginal patients with vaginal discharge was 14.7%. the prevalence of mixed infection in patients without vaginal discharge was 6.3%.

Malodour: Out of 39 patients with mal odour with vaginal discharge 6 patients (15.3%)were positive for

Table 2. Distribution of Individual Infection by Status of Vaginal Discharge

	Bacterial Vaginosis		Candida		Trichomonas vaginalis		Gonorrhoea	
Vaginal discharge	Count	%	Count	%	Count	%	Count	%
Absent	14	43.8%	6	18.85	6	18,8%	4	12.5%
Present	28	41.2%	24	35.3%	15	22.1%	3	4.4%
p value	0.831		0.092		.705		.206(Fisher's exact)	

Table 3. distribution of Individual Infection by Status of UTI

	Bacterial Vaginosis		Candida		Trichomonas vaginalis		Gonorrhoea	
UTI	Count	%	Count	%	Count	%	Count	%
Absent	29	44.6%	17	26.2%	15	23.1%	4	6.2%
present	13	37.1%	13	37.1%	6	17.1%	3	8.6%
p value	0.470		0.253		.487		.693(Fisher's exact)	

Table 4: Distribution of Individual Infection by Diabetic Status

	Bacterial Vaginosis		Candida		Trichomonas vaginalis		Gonorrhoea	
	Count	%	Count	%	Count	%	Count	%
Non-Diabetic	30	49.2%	12	19.7%%	13	21.3%	6	9.8%
Diabetic	12	30.8%	18	46.2%	8	20.5%	1	2.6%
p value	0.069		0.005		.924		.242(Fisher's exact)	

two organism, among 29 patients with vaginal discharge without mal odour, 4 had mixed infection.

UTI symptoms: Out of the 35 patients with symptoms of urinary tract infection, 4 had mixed infection. The prevalence was found to be 11.4%. in the remaining 65 patients 8 (12.3% were positive for mixed infection.

Healthy vaginal environment is maintained by the Lactobacillus by their production of lactic acid. this harmony was disturbed by the abnormal bacterial flora causing alteration in pH of vagina, also causing malodour. Thus polymicrobial causation hypothesis of bacterial vaginosis was described and is widely accepted. Bacterial vaginosis is defined by presence of distinct abnormal flora where by the lactobacilli is replace abnormal flora which are generally Gardenerella vaginalis. Hence diagnostic criteria were laid to define the vaginal infections and their diagnosis. They are Amsel's criteria and Nuggent's criteria. Creating the awareness regarding the risk factors for the vaginal infections and the earliest diagnosis and syndromic management been main stay of treatment since ages and still being relevant strategies till date.

In our present study, bacterial vaginosis alone accounts to most infections for around the 33 and followed by trichomonas alone had 12 and candida alone affected 25 percent and gonorrhoea had less incidence affecting 6 individuals and rest of them were affected with the mixed infections. Garland *et al.* study of 110 women, individuals with more than single pathogen infecting are as high as 55 percent and mere 39 percent being affected by the single pathogen[11]. Vaginal infections present with wide spectrum of symptoms although not always a single symptom is consistent with the disease and generally different combinations of symptoms will occur. symptoms spectrum varying from the vaginal discharge, leucorrhea, pruritis, fever and associated UTIs. Awareness of the symptoms of the vaginal infections helps early screening of the individuals and their partners for the infections and helpful in early adequate treatment reducing the morbidity of the infecting and also helpful prevention of the transmission of the disease. Diabetic status of the individual and marriage status and parity and number of sexual partners were believed to be major risk factors and said to be commonly and significantly influencing the discases infection organisms and outcomes. In the present study Out of 100 study samples, 39 patients (39%) of the study population were diabetic. Out of the 39 patients, disease positive was seen among 33 patients (84.6%) and among the other 61 patients who were not diabetic, 55 patients were positive for one of other organism causing vaginal infection. The difference in status of vaginal infection based on diabetic status of the study population was insignificant with a p value of 0.405 and in present study there is a significant difference in prevalence of candida infection was observed between patients based on their diabetic status with a p value of 0.005 but No difference was observed in other organisms between patients based on their diabetic status thus once again drawing attention to the increased risk prone to the candida infection and being opportunistic infection in diabetic and immune deficient individuals.

CONCLUSION

This study concludes that although there is difference in prevalence of Bacterial vaginosis among varying age groups among the reproductive age with high incidence among 25-30 group followed by 20-25 age group, their prevalence is not statistically significant. Despite vaginal discharge is common symptom associated with vaginal infections there is also

incidence of the vaginal infections without discharge and according to the present study differences between vaginal infections with discharge and infections without the discharge is not statistically significant. It has been observed, no significant association between the bacterial infections and diabetes is present but slight preponderance with Candida species present. Candida infections is markedly associated with the malodor than any other infections i.e, Trichomonas vaginalis, Bacterial vagueness, Gonorrhoea .While other infections are commonly associated with pruritis and Urinary tract infections. Bacterial vagueness is very most common etiology among the reproductive age with highest incidence in the present study, with even higher incidence among 25-30 years age. But their prevalence in different age groups is not so significant. As the clinical implications suggest significant prevalence of infections, there is strong need to conduct studies similarly in other centers as well as they will help to formulate better treatment strategies based on the prevalence of vaginal infections.

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