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ORIGINAL ARTICLE

Frequency of Microorganisms in High Vaginal Swabs Obtained from women in Outpatient Department presenting with Vaginal Discharge

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ABSTRACT

Background: After menstrual irregularities, second common gynecological problem is vaginal discharge. Change in dynamic ecosystem of vaginal flora can cause the overgrowth of pathological microorganism that creates vaginal discharge. Owing to syndromic approach in low income countries, the identification of specific causative organism is masked.
Aim: To determine the frequency of various micro-organism in high vaginal swab obtained from women in outpatient department presenting with vaginal discharge.
Methodology: We conducted this cross sectional descriptive studybetween January 2022 to December 2022 at Hayatabad Medical Complex, Peshawar. 431 patients were enrolled according to selection criteria. Attending Gynecologist carried out the complete evaluation & established a clinical diagnosis & collected HVS and sent to microbiological laboratory of the institution for reporting. In order to evaluate the participant characteristics and the prevalence of vaginal infections, descriptive statistics were performed.
Results: Of the 431 patients who presented with vagina discharge, their high vaginal swabs were sent for culture, 245(57.1%) cases were found positive for pathogens. Among the positive cases, bacterial vaginosis (29.21%) was followed by vaginal candidiasis as the most prevalent microbiological cause of abnormal vaginal discharge (21.2%), trichomonasvaginalis (15.5%) and combined infection (1.63%). Among the positive culture (32.2%) women had normal flora and (43.2%) patients with vaginal discharge had no growth on culture.
Practical implication: To detect the most common organism found in vaginal discharge and treat promptly to reduce drugs resistance and prevent complications like chronic pelvic pain preterm labour and infertility.
Conclusion: Bacterial vaginosis is the most frequent finding of women presenting with vaginal discharge in Out-Patient Department of our hospital followed be vaginal candidiasis and Trichomonasvaginalis.
Keywords: High vaginal swab,Trichomonasvaginalis, Bacterial vaginosis, Vaginal discharge Vaginal candidiasis.

INTRODUCTION

Vaginal discharge is the second most common complaint of reproductive age group after menstrual problems, accounting for 1% of all gynecological presentations. Vaginal discharge can occur naturally as a result of physiological processes or as a result of a pathological condition. During the clinical consultation, it is crucial to distinguish between the two. A significant distinguishing element is a history of a deviation from the typical pattern of vaginal discharge, which should be discussed with the women[1].

Vagina has dynamic ecosystem composed of vaginal flora which containa diverse collection of microorganisms.Lactobacillus species reside in the vagina of healthy premenopausal women, lactobacillus produces secretions having antimicrobial properties and it also maintains the acidic vaginal PH and provides protection against a diversity of pathogens[2]. The typical vaginal discharge is thick, whitish, and non-homogeneous.It includes material from sebum, sweat, and Bartholin's glands as well as secretions from the cervix and vaginal squamous epithelial cells in a serous transudate.. A small number of polymorphonuclear leukocytes may be seen, probably coming from the cervix.The pH is below 4.5, often ranging from 3.8 to 4.2. Lactobacilli, which are enormous gram-positive rods, are the most common organisms[3]. The menstrual cycle alters the normal physiological discharge.Around ovulation, the discharge has a tendency to be clearer with a stretchy consistency, and throughout the luteal phase, it may thicken and turn somewhat yellow. Normal healthy discharge shouldn't have a foulodour and shouldn't be accompanied by symptoms like itching, redness, or swelling[4].

Changes in colour, consistency, volume, or odour are signs of abnormal vaginal discharge, which may also include symptoms including itching, soreness, dysuria, pelvic discomfort, intermenstrual bleeding, or post-coital haemorrhage[5]. Infection is the most frequent cause of abnormal vaginal discharge. Bacterial vaginosis (BV), vulvo-vaginal candidiasis (VVC), or trichomoniasis are linked to 70% of all causes of vaginal discharge[6].Bacterial vaginosis, which accounts for up to 50% of all infections, is the most prevalent of the three reasons described[7].

Atrophic vaginitis, contact dermatitis brought on by allergic or irritating substances, foreign body vaginitis (caused by a tampon or condom that has been retained), cervical polyps, fistulas, and genital tumours are examples of non-infectious causes (e.g. tumours of the vulva, vagina, cervix, fallopian tube and endometrium)[8].

Chlamydia trachomatis and Neisseria gonorrhoeae are the most often identified pathogens from cervicitis, which is another significant factor in vaginal discharge. Sexually active women who have purulent endocervical discharge and readily produced cervical haemorrhage should be suspected of having cervicitis[9].
The vaginal microbiota is a diverse microbial community that includes several microbial species and frequently causes vaginal infections that manifest as vaginal discharge.

The goal of the current study is to ascertain the frequency of different microorganisms in high vaginal swabs taken from women who presented to the outpatient department with vaginal discharge.

MATERIALS & METHODS

This study was descriptive and cross-sectional. The patients who visited the Hayatabad Medical Complex Peshawar's OBG Outpatient Department between the months of January 2022 to December 2022 and had abnormal vaginal discharge provided the study's source of data.
Inclusion criteria: This study covered all individuals above the age of 16 who had clinically detectable vaginal discharge symptoms.

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Exclusion criteria: Women with history of recent vaginal examination within last 24hrs, sexual intercourse with in last 72 hrs, vaginal procedure within last 6 weeks and pregnant women were excluded from the study.

Sampling technique: A total of 431 women fulfilling the criteria mentioned above, were selected for this study. Non probability consecutive sampling technique was executed to collect cases for this study.

A thorough history, general examination, and gynaecological examination were performed first with the patient's prior consent. After establishing a clinical diagnosis, the vagina was visualised using a sterilised Cusco's speculum. The cervix and vagina were examined for any pathology. It may be possible to restrict the reasons of the vaginal discharge by looking for inflammatory characteristics like erythema and oedema during the physical examination.The vaginal discharge's quantity, colour, nature, and smell were observed. The discharge was then collected using sterile swabs from the upper portion of the posterior fornix and labelled with a unique identification number. Specimens were then transported at room temperature to the microbiology laboratory at Hayatabad Medical Complex, Peshawar, for additional processing within 12 hours. The specified standard operating procedure was followed for the laboratory procedures. The samples were cultured in order to identify the micro-organisms and its sensitivity to common anti-microbial were evaluated.

Participant's information about socio-demographic characteristic including age, occupation and level of education were obtained from patient's history sheet and laboratory request forms.

Data analysis: To evaluate the study participants' characteristics and the prevalence of vaginal infection, descriptive statistics were used. In this study the general formula of percentage was used for calculating the percentage of each microorganism in high vaginal swab depending on the value of identified frequency for each microorganism and the used formula:

(Percentage = frequency / total value) and finally the obtained value multiplied by 100 for obtaining the exact percentage.

RESULTS

During study duration total 5000 women attended the Gynaeoutpatient department, 431 patients complaining of vaginal discharge were enrolled for this study. Out of those patients 245(57.1%) HVS samples were positive for certain microorganisms.

Table I: Demographic characteristics of patients complaining of vaginal discharge

Age	No.	Percentage (%)
20-30	142	32.9%
31-40	98	22.7%
41-50	110	25.5%
51-60	81	8.9%
Education Level		
Literate	173	40%
Illiterate	258	60%
Occupation		
Employed	193	44.8%
Unemployed	238	55.2%
Parity		
<4 Kids	191	44.3%
>4 Kids	240	55.7%
Total	431	100%

The demographics of patients with vaginal discharge are shown in Table 1. The patient's ages ranged from 20-60 years.40% of patients were literate, meaning they had finished at least elementary and middle school. Among the enrolled women 30% were employed.

Table II: Growth on Culture

Status	Frequency	Percent
Yes	245	56.8%
No	186	43.2%
Total	431	100.0%

Table III: Micro-organism isolated

Micro-organisms	Frequency	Percent
No Growth	186	43.2%
Bacterial Vaginosis	72	16.7%
TrichomonasVaginalis	38	8.8%
Mixed growth	4	0.9%
Candida Species	52	12.1%
Normal Flora	79	18.3%
Total	431	100.0%

Table IV: Frequency of micro-organism among positive cases

Micro-organism	Number	Percentage (%)
Bacterial Vaginosis	72	29.38%
Vaginal Candidiasis	52	21.22%
TrichomonasVaginalis	38	15.5%
Mixed	4	1.63%
Normal Flora	79	32.24%
Total	245	100%

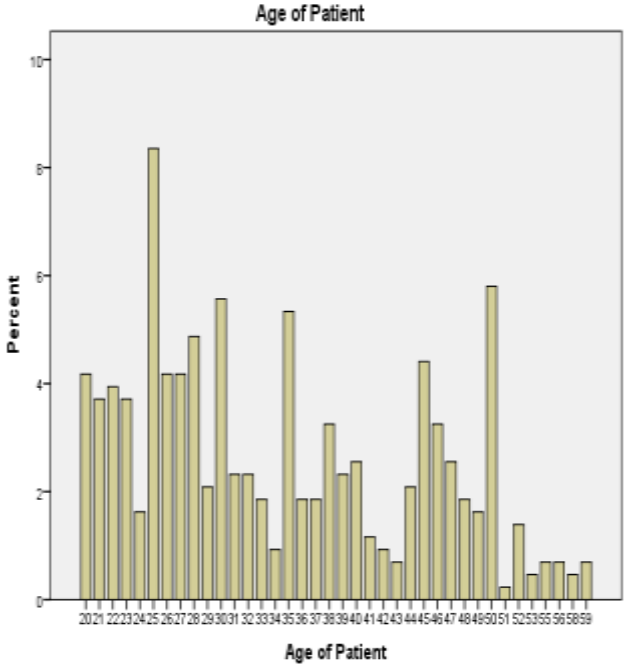

Table V: Micro-organism in relation to Age Groups

Micro-organism	No.	20-30	31-40	41-50	51-60
Bacterial Vaginosis	72 (16.7%)	32 (7.42%)	14 (3.2%)	18 (4.18%)	8 (1.86%)
Vaginal Candidiasis	52 (12.1%)	23 (5.33%)	20 (4.64%)	7 (1.62%)	2 (0.46%)
TrichomonasVaginalis	38 (8.8%)	13 (3.01%)	10 (2.32%)	9 (2.09%)	6 (1.3%)
Mixed growth	4 (0.93%)	2 (0.46%)	2 (0.46%)	0	0
Normal Flora	79 (18.3%)	29 (6.72%)	22 (5.1%)	18 (4.2%)	10 (2.32%)
No Growth	186 (43.1%)	27 (6.26%)	32 (7.42%)	38 (8.82%)	89 (20.65%)
Total	431	126	100	90	115

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DISCUSSION

Many vaginal infections with vaginal discharge are caused by the vaginal microbiota, which is a complex microbial community made up of several microbial species. In our study, 431 patients were enrolled who presented with abnormal vaginal discharge, their high vaginal swab was sent for culture and microscopy, 245(57.1%) cases were microorganism positive. Vaginal candidiasis (21.2%) and BV (29.21%) were the two most prevalent microbiological causes of abnormal vaginal discharge among the positive patients, Trichomonasvaginalis (15.5%) combined infection (Candida and BV) (1.63%), among the positive culture (32.2%) women had normal flora.

In a study conducted by Khan SA et al[10], the type of organism isolated from the vaginal discharge were Gardnerella Vaginalis in 28%, candida albicans in 12%, and Trichomonas-vaganilis in 4% of women. In Bahaudeen[11]research study,Out of 250 specimens, 180 had positive microbial growth, which is 72% of the prevalence of vaginal infection, the higher distribution of isolated Organism from vaginal swab was 27.2% for candidiasis.

Another study[12] reported 27.68% women having candidial infection, 11.58% trichomonal infection, 2.27% bacterial vaginosis and 47.06% had no growth in their vaginal discharge.

A study[13] showed 36% candidial species in vaginal discharge second to bacterial vaginosis which was 38% and trichomonasvaginalis just 2%.

In our study20–30 years old (29.21%) was the highest age range for vaginal infections. In this age range, particular vaginal infections predominated. The infection is not greatly influenced by educational level.

In another study[14], in 731 out of the 1923 cultivated samples, substantial growth was achieved. The highest prevalence of infection, 289 out of 731 (39.5%), was seen in people aged 30 to 40, followed by 262 out of 731(35.8%) in the 41 to 50 age range.

In a study done in Pakistan among 120 patients with vaginaldischarge, 5.8% were 13 to 20 years old 24.2% word 21 to 30 years old and majority 55.8% were 31 to 40 years old while 14.2% patients were 41 to 49 years old. High Vaginal Swab results showed that 48.3% patients had fungal infection, 25% had Trichomonas while 14.2 % patients had mixed infection

In another study[7] majority of the female were in the age group between 20 to 65 years. In that study, 100 samples were positive for bacterial growthout of 220 high vaginal swab cultures.Another study[12] reported that maximum number of infections were found in age group of 26 to 35 years.

In MV Majigo[6] study, 128 cases out of 196 were positive for certain growth. Among them bacterial vaginosis were 33.2%, vaginal candidiasis 19.4%, Trichomonasvaginalis 13.36% and mixed infection 0.5% (candidial +Trichomonas).Majority of the woman 56.6% were aged between 25 to 35 years 69.9% had low education (primary or below) 34.7% women were housewife (unemployed).

In our study, Bacterial vaginosis was found in high frequency in the age group of 20–30 years (13.1%) followed by 41–50 years (7.34%), then by 31–40years(5.7%) and 51–60 years (3.2%).

Joyisa et al[16] in their study enrolled 750 women ranging from 15 to 46 years of age and the mean age was 23.6 years. Joyisa study showed 280(37.3%) woman were tested positive for bacterial vaginosis. Moreover, Langsferd[17] study showed bacterial vaginosis in 28% cases whereas, Sami S[18] report 30.7% cases with bacterial vaginosis.

According to our study, 20 to 30 year old (9.38%) were the age group most frequently affected by vaginal candidiasis.and 31–40 years 8.1% followed by 41–50 years 2.86% and 51–60 yrs 0.82%. In Kazi[19] study vaginal swab culture showed 10% of candida specie and Lactobacillus 32% in age group of 20 to 30 years .In the age group 31 to 40 years Lactobacillus fermentum 28% and candida 24% Sami S[18] reported candida 10% Langsferd[17] reported 8% candida.

In our study, Trichomoniasis was detected in the highest rate at the age group of 20–30 years (5.3%) followed by 31–40(4.1%)and 41–50 years (3.7%), then by 51–60 years (2.4%).A study done by Anorlu RI[20], total of 200 patients were examined Trichomonasvaginalis was found in 74.5% of women,there were no statistically significant association between age, parity,marital status and number of sexual partners but prevalence of Trichomonasvaginalis is high among the woman presented with vaginal discharge. Sami S et al[18] in their study reported that 7.2 cases had Trichomonasvaginalis in their vaginal discharge where as another study[6] found Trichomonasvaginalis in 13.3% of women presenting with vaginal discharge.

Our study reported 43.1% non-specific vaginitis, where no organism was found. Non specific vaginitis was most frequently observed in the age range of 51-60 years (20.65%), then 41-50 years (8.82%). 04 patients, or 0.82% of the total, had mixed Candida and BV infections. These patients were primarily in the age groups 20–30 and 31–40 years. In Majigo MV[6] study mixed discharge (Candida + Trichomonasvaginalis) was reported in only 0.5% cases.

The variances in the actual research participants, personal hygiene practices, environments, socioeconomic circumstances, and cultural aspects of the study participants may account for the variations shown in various studies. In low resource countries the prevalence and etiology of vaginitis is uncertain owing to common practice of prescribing empirical treatment to women with vaginal discharge and skipping investigation which is not a rational approach.

CONCLUSION

This study concludes that among the study population, the Bacterial Vaginosis is relatively high in women with vaginal discharge followed by vaginal candidiasis and Trichomonasvaginalis.

Limitation of study: This was a small study with limited data for factors contributing to vaginal infection. Study was conducted in a single center which also contributes to the limitations of this study, hence restricting the generalization of study results.

Recommendation: General practitioners often treat the vaginal discharge on clinical grounds. There is evidence that clinical diagnosis based on signs and symptoms, poorly correlate with laboratory findings, so it is recommended to get high vaginal swab culture done before embarking upon certain treatment. This strategy will help in avoiding the over or under treatment of the infection and preventing drug resistance. Further longitudinal and follow up studies are recommended to investigate the effects of infection and the role of micro-organisms in causing vaginal infection.

Conflict of interest: Nothing to declare

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