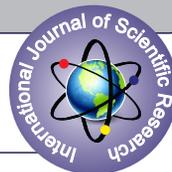


## ETIOLOGICAL CHARACTERIZATION OF ABNORMAL VAGINAL DISCHARGE IN WOMEN OF REPRODUCTIVE AGE GROUP IN A RURAL AREA OF HARYANA, INDIA



### Microbiology

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### ABSTRACT

Reproductive tract infections including sexually transmitted infections are an important cause of morbidity among women. A syndromic case management strategy is usually adopted to treat these infections. Most common presentation of RTI/STI is vaginal discharge. However not all cases of vaginal discharge have an infectious etiology leading to overtreatment and associated consequences. Also the prevalence of different organisms may vary in different geographical areas. This study was undertaken to find out the infectious causes of vaginal discharge in population catered by our hospital. A total of 100 patients presenting with complaints of vaginal discharge were included in the study. Swabs were collected from the vaginal discharge from the patients and subjected to wet mount, gram staining and culture on Blood agar for detection of different organisms. Infectious etiology could be detected in 52% patients. Most common etiology seen was bacterial vaginosis (30%), followed by Candidiasis (18%) and Trichomoniasis (4%). In approximately half of the study population no infectious etiology could be detected. This study indicates that for rational management of patients syndromic approach should be supported by laboratory diagnosis wherever possible.

### KEYWORDS

Vaginal discharge, bacterial vaginosis, vulvovaginal candidiasis, Trichomoniasis

### INTRODUCTION:

Reproductive tract infections (RTIs) present a huge disease burden and adversely affect reproductive health. RTIs can be endogenous or sexually transmitted. Reproductive tract infections have tremendous adverse consequences in terms of pain, discomfort, anxiety, pelvic inflammatory diseases, pelvic abscess, menstrual disorders, infertility and ectopic pregnancy.<sup>1</sup> Studies have reported vaginal discharge as the most common presenting complaint of women suffering from RTI/STI syndrome.<sup>2</sup> Vaginal discharge can however be physiological or pathological. Among the cases of infectious or pathological vaginal discharge bacterial vaginosis, candidiasis and trichomoniasis account for a majority of cases. Multiple infections can also coexist.

WHO has recommended syndromic management approach based on identification of common patterns of symptoms and signs, knowledge of commonest organisms causing those syndrome and antimicrobial effective against them. Most of the time a laboratory diagnosis is not sought unless there is therapeutic failure. In a peripheral health centre this approach has the advantage of early initiation of therapy, better compliance and better cure rates. However it has the disadvantage of overtreatment, when drugs are given against multiple organisms and the cause is non infectious or monomicrobial. Shah et al in their study concluded that the current symptom-directed treatment is likely to miss a substantial proportion of vaginal discharge cases because of the poor performance of the clinical examination as screening test, and because most infections are asymptomatic or unrecognized.<sup>2</sup> Specific management of symptomatic vaginal discharge therefore requires a good clinical workup supported by laboratory investigations.

This study was therefore undertaken to investigate the etiology of vaginal discharge in this area of Haryana.

### MATERIAL AND METHODS:

The present study was conducted in the department of Microbiology and department of Obstetrics and Gynaecology SGT hospital of Faculty of Medicine and Health Sciences, SGT University, Village Chandu Budhera, Gurugram, Haryana. The study was carried out during a period of four months from June 2015 to September 2015.

A total of 100 female patients in reproductive age group presenting with complaints of vaginal discharge were included in the study. Pregnant, post-partum, post menopausal and menstruating women were excluded from the study. All relevant demographic, socioeconomic and clinical information was recorded in a predesigned proforma.

The pH of the discharge was measured using pH paper ranging from pH 2 to 10. The pH paper was held in forceps and dipped into vaginal discharge.

Three swabs were taken from the discharge. The first swab was dipped in freshly prepared saline and immediately examined under microscope to look for presence of *Trichomonas vaginalis*. The second swab was taken and smears were prepared on clean, grease free glass slides. The smears were stained with Gram stain and observed under microscope. The third swab was used for culture on blood agar. Whiff test was done by putting a drop of 10% KOH on the swab.<sup>3</sup>

Bacterial vaginosis was diagnosed by whiff test and examination of Gram stained smears under oil immersion using Nugent's scoring system for diagnosis of bacterial vaginosis.<sup>4</sup> (Table 1).

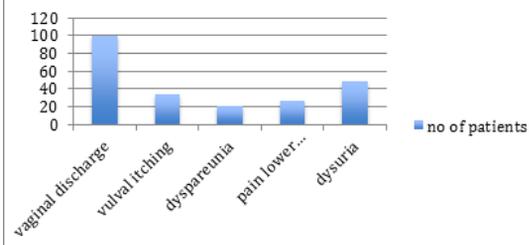
Score	Lactobacillus morphotype/ field	Gardnerella morphotype/field	Curved bacteria (mobiluncus) / field
0	>30	0	0
1	5-30	<1	<1
2	1-4	1-4	1-4
3	<1	5-30	5-30
4	0	>30	>30
Interpretation	Score of >7 is considered diagnostic of bacterial vaginosis		

Candidiasis was diagnosed by examination of saline wet mount, gram stained smear showing gram-positive oval budding yeast cells with or without pseudohyphae and growth on blood agar. Speciation of *Candida* from blood agar was done by germ tube and color of colonies on CHROM agar.

*Trichomonas vaginalis* infection was diagnosed by the presence of actively motile spear shaped flagellates on saline mount.

### RESULT:

A total of 100 women were included in the study. The presenting symptoms were vaginal discharge in 100% patients, vulvul itching or irritation in 34 (34%) patients, dyspareunia in 20(20%) patients, pain lower abdomen in 27(27%) patients, dysuria in 48(48%) patients (Fig:1)

**Fig. 1: Distribution of patients according to symptoms**

Majority of the patients (58%) had thin watery discharge, while thick mucoid discharge was seen in 22% patients and white curdy discharge was seen in 20% patients.

Of the 100 patients presenting with vaginal discharge, infectious etiologies could be identified in 52 (52%) patients. The commonest etiology identified was bacterial vaginosis in 30 (30%) patients, candidiasis in 18 (18%) patients and Trichomoniasis in 4 (4%) patients. *Candida albicans* was the most common species (11/18), followed by *C. tropicalis* (3/18), *C. Glabrata* (3/18) and *C. krusei* (1/18).

#### DISCUSSION:

Reproductive tract infections are one of the commonest infections affecting females. The present study was done to detect microbial causes of vaginal discharge in female patients of reproductive age group. Of the 100 women an etiological diagnosis could be established in only 52% of patients. This is in accordance with results of Shivanjini R et al and Narayankhedkar A et al who could identify infectious organisms in 51.75% and 49.1% of patients respectively<sup>5,6</sup>. The identification of infectious etiology in vaginal discharge samples ranged from 35% by Aggarwal P et al, 38% by Shah M et al, 70% by Nwadioha S et al, 80.5% by Vijaylakshmi D et al and 89% by Masand DL et al<sup>7-10</sup>. Chauhan et al in their study found that only 35.6% of symptomatic females tested positive for various STIs in the laboratory<sup>11</sup>. The reason for this could be difference in the number and sensitivity of diagnostic tests being used, the presence of physiological discharge or other non-infectious etiologies like cancer etc.

Most common etiology in the present study was bacterial vaginosis (30%) followed by Candidiasis (18%) and Trichomoniasis (4%). This is in accordance with several other studies where bacterial vaginosis was the commonest infectious etiology found. Masand DL et al, in a study showed bacterial vaginosis to be commonest (53%) followed by candidiasis (14%) and Trichomoniasis (6%)<sup>10</sup>. Similarly Aggarwal P et al and Puri KJ also showed BV to be commonest at 50% and 45% followed by candidiasis at 32% and 31% and Trichomoniasis at 1% and 2% respectively<sup>12</sup>. Bacterial vaginosis was the most prevalent vaginal infection. The presence of BV increases susceptibility to HIV infection<sup>13</sup>.

Candidiasis was the second most common etiology identified in the present study. This finding is in agreement with various studies where prevalence of vulvovaginal candidiasis was next to bacterial vaginosis. In a study by Nwadioha et al and Narayankhedkar et al candidiasis was found to be the most common etiology followed by BV and Trichomoniasis<sup>8,6</sup>. The prevalence of vulvovaginal candidiasis ranges from 12% to 42% in various studies. (Table 1). In the current study *Candida albicans* was isolated in 11/18 patients whereas non albicans *Candida* (NAC) were seen in 7/18 patients. Since NAC are more resistant to azole antifungal therapy, a presumptive treatment without laboratory diagnosis may lead to therapeutic failure. We strongly recommend culture and speciation of candida from vaginal discharge samples. Trichomoniasis was the least prevalent of all the infections as supported by other studies also. (Table 1).

**Table 1: Prevalence of Bacterial Vaginosis (BV), Vulvovaginal Candidiasis (VVC) and Trichomonas vaginalis (TV) infection in reproductive age group females in different studies**

Study	Year	BV (%)	VVC (%)	TV (%)
Puri et al <sup>12</sup>	2003	45	31	2
Khan et al <sup>14</sup>	2009	28	12	4
Gandhi et al <sup>15</sup>	2011	47.31	29.75	1.21
Vijayalakshmi et al <sup>9</sup>	2011	54	22	4
Masand et al <sup>10</sup>	2013	53	14	6

Aggarwal P et al <sup>7</sup>	2014	50	32	1
Present study	2015	30	18	4
Murmu et al <sup>16</sup>	2016	36	20	5
Nwadioha et al <sup>8</sup>	2008	26	42	1.5
Narayankhedkar et al <sup>6</sup>	2014	17.3	30	1.8

WHO and NACO recommend syndromic case management of RTI/STIs, wherein RTIs/STIs are classified into easily identifiable syndromes. Treatment is given on the basis of common organisms causing that syndrome even without laboratory confirmation. While this approach has advantages in terms of early treatment, better compliance and higher cure rates, it has the biggest disadvantage in terms of overtreatment or wrong treatment. This may lead to emergence of antibiotic resistance, which is not desirable in this era of antibiotic resistance. In this study we demonstrated the absence of infectious etiology in a substantial proportion of patients. This means that clinically STIs are overdiagnosed and physiological discharge may be misinterpreted as pathological or low sensitivity of the diagnostic tests. If blanket treatment is given to all patients, then many a women will receive unwarranted antimicrobial therapy. This not only exposes patients to adverse drug reactions but also leads to increased financial burden and antimicrobial resistance.

Though vaginitis is a mild and easily treatable infection. However it can lead to increased transmission of HIV and also other complications like PID, preterm labour, spontaneous abortion etc. there are also chances of transmission of candidiasis and trichomoniasis to the sexual partner. Hence there is a need for early diagnosis and treatment of these infections, especially in pregnant women. For Trichomoniasis the sexual partner of the patient should also be treated.

The epidemiology of STI/RTI varies from country to country and from one region to another within a country. The frequently occurring pathogens in a particular population or geographic area must be known in order to ensure a rational treatment for empirical therapy of vaginal discharge. As shown by this study a large proportion of cases remain undiagnosed which could be due to several reasons as previously discussed. Therefore clinical or syndromic diagnosis should be supported by laboratory findings to ensure proper treatment. A simple test like gram staining of vaginal smears can be very useful in resource limited settings. Chauhan et al also concluded that availability of accurate, more sensitive and standardized laboratory facilities can be helpful in improving the performance of syndromic approach<sup>11</sup>.

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