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Study of lower genital tract infections in women complaining of white discharge per vaginum

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Abstract
Introduction: Vaginal Discharge is most common distressing symptoms in women. But there is social implication and embarrassment of women in front of families and society, lack of knowledge, illiteracy and superstitious belief makes under treatment of disease. Syndromic approach makes adequate and timely management of disease.
Material and Method: Study of 300 women with complain of white discharge per vaginum who attending Gynaecology OPD at tertiary care hospital, Mumbai for period of 1year. Study of discharge done by Gram staining and wet mount method under microscope and treated by syndromic approach under WHO guideline.
Result: Among 300 cases Bacterial Vaginosis most common followed by candidiasis followed by Bacterial Vaginosis with candidiasis.
Conclusion: Contraception, sex education & behavioral changes plays major role in improving the sexual health & thereby avoiding grave consequences therewith.

Keywords: Bacterial vaginosis, candidiasis, trichomoniasis, vaginal discharge, STI

1. Introduction
White discharge (Leucorrhoea) can be physiological or pathological. Physiologically most common during mid-cycle period, immediately post-menstruation and during pregnancy.

Pathological leucorrhoea comprises of various infections like Trichomoniasis, Bacterial vaginitis and Candidiasis Vaginal Infections are most common sexually transmitted infections (STI). Risk factor associated with established STIs include a recent change of sexual partner, an increased number of sexual partners, young age coitus, previous history of STIs, inconsistent condom use, barriers to accessing health services and young age. Ignorance and lack of knowledge of personal hygiene and health, embarrassment, feeling of guilt, fear of defamation were factors which prevented patients coming forward for treatment.

Reproductive Tract Infections (RTIs) have an adverse impact on women health such as chronic vaginal discharge, chronic backache, pelvic inflammatory disease, infertility, ectopic pregnancy, postpartum sepsis and post aborted sepsis, spontaneous abortion /fetal wastage, prematurity or IUGR, Congenital / perinatal infection and CA cervix.

The emergence of spread of HIV infections had major impact on management of and control of STIs. Hence WHO include STIs in second phase of National Family Health Scheme in collaboration with National AIDS control program 1999 [1]. WHO recommended that countries establish and use national standardized treatment Protocols for STIs

National AIDS Control Organization (NACO) in 1999 introduced syndromic approach to treat patient with abnormal vaginal discharge. In syndromic approach patient presented with white vaginal discharge treated in same visit [2].

2. Aims and Objectives
Study of lower Genital Tract infections such as Bacterial Vaginosis, Candidiasis and Trichomoniasis in women complaining of white discharge per vaginum & association of infection among study group as per age, parity, contraception, socioeconomic status, sexual behavior and literacy of women.

3. Material and Method
Cross sectional observation study for period of 1 year.

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Sample size – 300 cases attending Gynecology OPD at tertiary health care centre.

Nugends score criteria use for diagnosis of Bacterial Vaginosis. Score 7 or above is consider as positive for Bacterial Vaginosis.

3.1 Inclusion Criteria
1. Female complaining of white Discharge per vaginum.
2. Female more than 18 years with sexually active status.
3. Female with other complain but found white discharge per vaginum.

3.2 Exclusion Criteria
1) Pregnant women
Patient fulfilling eligibility criteria were examined in OPD and collected white discharge swabs sent for microscopy, gram staining and wet mount study. Patients were given treatment in same visit as per WHO syndromic approach in association with NACO.

Data was collected in predesign excel data sheet format and analysis of data done using statistical software.

4. Result and Observation

Table 1: Age distribution amongst study population

Age Group	Frequency	Percent
18 to 25 years	86	28.7
26- 35 years	149	49.7
36-45 years	50	16.7
Above 45 years	15	5.0
Total	300	100.0

As seen in the above table, 26-35 years (49.7%) was the most common age group amongst study population followed by 18 to 25 years (28.7%), 36- 45 years (16.7%) and Above 45 years (5%).

Table 2: Marital status amongst study population.

Marital Status	Frequency	Percent
Married	291	97.0
Single	5	1.7
Widow	4	1.3
Total	300	100.0

Table 3: Clinical features amongst study population

Clinical Features	Frequency	Percent
Only White Discharge	66	22
White discharge with Pruritus Vulva	63	21
White discharge with Abdomen Pain	110	36.6
White discharge with Burning micturition	61	20.3

Table 4: HIV status amongst study population

HIV	Frequency	Percent
Non-Reactive	296	98.7
Reactive	4	1.3
Total	300	100.0

Table 5: Type of Contraception amongst study population

Contraception	Frequency	Percent
Condom	34	11.3
Hysterectomy	3	1.0
IUCD	36	12.0
None	169	56.3
OC Pills	4	1.3
TL	54	18.0
Total	300	100.0

Table 6: Socioeconomic statuses amongst study population

Socioeconomic Status	Frequency	Percent
Class I(upper class)	12	4.0
Class II(upper middle class)	30	10.0
Class III(middle class)	100	33.3
Class IV(lower middle class)	112	37.3
Class V(lower class)	46	15.3
Total	300	100.0

Table 7: Literacy status amongst study population

Literacy status	Frequency	Percent
Illiterate	41	13.7
Upto 5th	60	20.0
Upto 10th	119	39.7
Upto 12th	56	18.7
Graduate and above	24	8.0
Total	300	100.0

Table 8: Diagnosis among study population

Diagnosis	Frequency	Percentage
Bacterial vaginosis	127	42.3
Candidiasis	35	11.7
Bacterial vaginosis and candidiasis	15	5.0
Trichomoniasis	0	0
Not any infection	123	41
Total	300	100

Table 9: Association of infection with sexual frequency of married women

	Bacterial Vaginosis	Candidiasis	Bacterial Vaginosis With Candidiasis	Total
Once /Week	42(33%)	10(28.5%)	3(20%)	55(31.0%)
2 To 7 Times/Week	72(56.6%)	21(60%)	10(66.6%)	103(58.1%)
Single Or Widow	13(10.2%)	4(11.4%)	2(13.3%)	19(10.7%)
	127	35	15	177

Table 10: Comparison of age group with different vaginal infections amongst study population.

			Bacterial Vaginosis(B)	Candidiasis	BV+C	Total
Age Group	18-25 years	Count	34	13	5	52
		%	26.8%	37.1%	33.3%	29.38%
	26- 35 years	Count	66	13	7	86
		%	52.0%	37.1%	46.7%	48.59%
	36- 45 years	Count	21	8	3	32
		%	16.5%	22.9%	20.0%	18.08%
	More than 45 years	Count	6	1	0	7
		%	4.7%	2.9%	0.0%	3.95%
			127	35	15	177
			100.0%	100.0%	100.0%	100.0%

Table 11: Comparison of marital status with different vaginal infections amongst study population.

			Bacterial Vaginosis (B)	Candidiasis	BV+C	Total
M/S/W	Married	Count	122	35	15	172
		%	96.1%	100.0%	100.0%	97.17%
	Single	Count	3	0	0	3
		%	2.4%	0.0%	0.0%	1.69%
	Widow	Count	2	0	0	2
		%	1.6%	0.0%	0.0%	1.3%
Total		Count	127	35	15	177
		%	100.0%	100.0%	100.0%	100%

Table 12: Comparison of HIV status with different vaginal infections amongst study population.

			Bacterial Vaginosis(B)	Candidiasis	BV+C	Total
HIV	Non-Reactive	Count	125	34	15	174
		%	98.4%	97.1%	100.0%	98.30%
	Reactive	Count	2	1	0	3
		%	1.6%	2.9%	0.0%	1.69%
Total		Count	127	35	15	177
		%	100.0%	100.0%	100.0%	100%

Table 13: Comparison of contraception with different vaginal infections amongst study population.

Contraception		Bacterial Vaginosis (B)	Candidiasis	BV+C	Total
Condom	Count	14	1	0	15
	%	11.00%	2.90%	0.00%	8.47%
Hystrectomy	Count	1	1	1	3
	%	0.80%	2.90%	6.70%	1.69%
IUCD	Count	17	5	3	25
	%	13.40%	14.30%	20.00%	14.12%
NONE	Count	69	23	7	99
	%	54.30%	65.80%	46.70%	55.93%
OC PILLS	Count	3	1	1	5
	%	2.40%	2.90%	6.70%	2.82%
TL	Count	23	4	3	30
	%	18.10%	11.40%	20.00%	16.95%
Total	Count	127	35	15	177
	%	100.00%	100.00%	100.00%	100%

Table 14: Comparison of socioeconomic status with different vaginal infections amongst study population.

Socioeconomic Status		Bacterial Vaginosis (B)	Candidiasis	BV+C	Total
Class I Upper class	Count	2	2	1	5
	%	1.60%	5.70%	6.70%	2.82%
Class II Upper middle	Count	14	2	0	16
	%	11.00%	5.70%	0.00%	9.04%
Class III middle	Count	46	13	7	66
	%	36.20%	37.10%	46.70%	37.29%
Class IV Lower middle	Count	47	12	5	64
	%	37.00%	34.30%	33.30%	36.16%
Class V Lower	Count	18	6	2	26
	%	14.20%	17.10%	13.30%	14.69%
Total	Count	127	35	15	177
	%	100.00%	100.00%	100.00%	100%

Table 15: Comparison of white discharge with Pruritus Vulva with different vaginal infections amongst study population.

			Bacterial Vaginosis(B)	Candidiasis	BV+C	Total
Pruritis Vulva	No	Count	103	18	10	131
		%	43.3%	7.6%	4.2%	74.01%
	Yes	Count	24	17	5	46
		%	38.7%	27.4%	8.1%	25.9887
			127	35	15	177
			42.3%	11.7%	5.0%	100

5. Discussion
In the current study 177 out of 300 (59%) cases were infected with either Bacterial vaginosis or candidiasis or both.

5.1 Bacterial Vaginosis
In the present study, out of 300 cases 127 were positive for bacterial vaginosis, i.e. 42.3% of study population, similar to Gupta et al., 2002 [3] who reported cases of bacterial vaginosis as 44.6% and study by Rekha et al. 2010 [4] who reported cases of bacterial vaginosis as 47%.

Studies conducted by Rao et al in 2004 [85] bacterial vaginosis cases was 26% and shazia Khan et al in 2009 [5] found 28% case which is comparatively lesser than present study.

5.2 candidiasis
Candidiasis was observed 35 out of 300 i.e 11.6% of study population.

Which is similar to study conducted by Samia S. Khamees et al 2012 [82], who found it to be (11.9%) 37 out of 310 abnormal vaginal discharge.

In study conducted by Gupta et al., 2002 [6] candidiasis was seen in9.3%.and study Rekha et al 2010 [86] found 14%.

5.3 trichomoniasis
In present study infection with trichomoniasis was zero percent. This might be due to delay in examination of organism under microscopes similar to Soba et al., 2015 [7].

Age group
Bacterial vaginosis, candidiasis or both were more common in reproductive age group between 26-35 years (46.7%) followed by 18 - 25 years (33.3%) and this difference was statistically not significant, same with Rekha et al 2010 [4] who also found 45% infection in age group 26-30 years.

Parity
Out of 177 cases 114(64%) was multipara and 63(35%) nullipara, majority infected cases are multiparous. While Vikram Patel et al. [8] found 83 (54%) out of 151 were multiparous and 68 (45%) were nullipara.

Marital status
In the present study, 97% of study population were married, single (1.7%), widow (1.3%) similar with Varsha Chaudhary et al. [9], in which most of the subjects with vaginal discharge were married (98.5%) the difference was not statistically significant.

Clinical features
White discharge with Pruritus Vulva
In the current study, patient complaining of white discharge with Pruritus Vulva was 62 (20.7%) of study population similar with Murugesan M et al. [10] who found white discharge with Pruritus Vulva in 23.64% of study population.

In the present study, white discharge with Pruritus Vulva was observed in 19% of bacterial vaginosis, 49% of candidiasis and 34% of combined bacterial vaginosis and candidiasis both, p value for this 0.001 and this difference was statistically significant.

White discharge with Abdomen Pain
In the study, out of 300 patients complaining of white discharge with pain in Abdomen were 109 (36.3%) of study population while in Murugesan M et al. [10], it was observed 56.36% which was more than present study.

Type of Contraception
In the present study, TL (18%) was the most common type of contraception amongst study population followed by IUCD (12%), followed by OC Pills (1.3%) this difference was statistically not significant, in agreement with Pant B et al. [11] TL (42%) was most common type of commonest type of contraception among study population followed by IUCD (33%), followed by OC pills (13%).

HIV status
Out of 300 cases 4 cases were HIV positive 1.3% of study population had reactive HIV status. In the current study, in bacterial vaginosis, observe 2 cases of HIV i.e. 1.6%, in candidiasis 1 case i.e. 2.9% and 1 more case in patient neither positive for Bacterial vaginosis nor for candidiasis and this difference was statistically not significant.

Socioeconomic status
In the present study, in women with bacterial vaginosis infection, Class IV was the most common SES (37%) followed by Class III (36.20%) in women with candidiasis infection, Class III (37.10%) was the most common SES followed by Class IV (34.30%) in women with combined bacterial vaginosis and candidiasis infection, Class III (46.70%) was the most common SES followed by Class IV (33.30%) and this difference was statistically not significant, in agreement with Varsha Chaudhary et al. [9] in which most of the subjects with vaginal discharge belongs to class V SES (25.8%) followed by class IV (18.2%). and this is because lack of awareness and accessibility to health services in low socioeconomic group.

Education status
In this study, cases were illiterate (13.7%) while in study conducted by Varsha Chaudhary et al. 2012 [9] 33.54% were illiterate.

In this study cases were Graduate and above (8%). While in study conducted by Varsha Chaudhary et al. 2012 [9] 17% graduate and above.

In the present study, most of the population in women with bacterial vaginosis infection, candidiasis infection and combined bacterial vaginosis and candidiasis infection had education of Upto 10th (42.50% vs 34.30% vs 33.30%) followed by education of 5th class (24.40% vs 25.70% vs 26.70%) and this difference was statistically not significant.

Coitus

In present study women with frequency of 2-7 times coitus in a week with husband had 56.6% infection with bacterial vaginosis followed by women with frequency of coitus once in a week had 33% infection followed by 13% infection in singles or widow who are not sexually active. In study it is found that more the number of coitus more will be the infection rate which conclude that bacterial vaginosis transmits sexually however 10% cases found in singles or widow who are not sexually active.

6. Summary

1. Most common Lower Genital Tract infection was Bacterial vaginosis 42.33% followed by candidiasis 11% followed by both bacterial vaginosis and candidiasis 5%.
2. In present study, 97% of infection was in married women. (Table-2).
3. The most common age group amongst study population was 26- 35 years 50% (Table-1).
4. Newly diagnosis of 4 HIV (1.3%) case in study which implies syndromic case management of STI in collaboration with National Aids Control program (NACP) under NRHM phase 2 help in screening of HIV infection, thereby decrease further transmission of disease and decrease developing new cases of HIV in community (Table-4).
5. Class IV (37.3%) i.e. lower middle class was the most common socioeconomic status amongst study population. This may be because lack of awareness and accessibility towards health facilities (Table-6).
6. Amongst 35 cases of candidiasis 17 (49%) cases had complaint of pruritus valve. And this was statistically significant (p= 0.001).
7. Amongst infected cases Abdomen Pain 37% was most common complaint, followed by only white discharge 22% followed by white discharge with pruritus vulve 21% (Table-3).
8. Infertility (4.3%) was the most common past history amongst study population followed by TB (1.7%), Diabetes (1.3%) and RVD (1%).
9. Most of the study population had NUGENST'S SCORE of 7 and above which is significant for bacterial vaginosis (43%) followed by intermediate Nugent's score of 4-6 were 32%, and followed by negative for bacterial vaginosis Nugent's score 0-3 were 25%.
10. In women with Bacterial Vaginosis infection TL was the most common type of family planning method used and those with candidiasis IUCD were used. Women with both bacterial and candidiasis TL and IUCD equally used. However, there is no significant association between them (Table-5).

7. Conclusion

Illiteracy, lack of knowledge & awareness about personal hygiene, social stigma & scarcity of healthcare resources are the main reasons of sexually transmitted diseases in developing countries like India. Contraception, sex education & behavioral changes plays major role in improving the sexual health & thereby avoiding grave consequences there with.

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