

Clinical And Microscopic Correlation of Vaginal Discharge

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ABSTRACT

Introduction: Vaginal discharge in the reproductive age group is the most common complaint encountered everyday both by gynecologists and general practitioners.

Among the cases of symptomatic vaginal discharge Bacterial vaginosis is commonest cause followed by Candidiasis and Trichomoniasis. Multiple infections can also coexist but these three conditions account for majority of all etiologies of abnormal vaginal discharge.

Material and methods: It is a cross sectional study. The study reported here attempts to present the clinico-cytological evaluation of vaginal discharge in a survey of two hundred patients suffering from vaginal discharge complaint. The study included the examination of the vaginal status of all women with gross characteristics of vaginal discharge and discharge material was obtained from the posterior fornix with a sterile swab stick for wet mount with normal saline and 10% of KOH, Whiff test and Gram stain. Papinaculaou smear taken in all the cases of the patients in reproductive age group.

Results: Bacterial vaginosis constitutes the most common cause of vaginal discharge, followed by Candidiasis and then Trichomoniasis in our set up. Pap smears revealed that 7 patients out of 200 were having various grades of cervical dysplasia. For the etiological diagnosis of symptomatic vaginal discharge the microbiological diagnostic approach is best.

Conclusion: In low resource setting, primary clinical diagnosis based on simple microscopy, pH and amine test with WHO algorithms should be made prior to treatment.

Keywords: Vaginal discharge, Bacterial vaginosis, Candidiasis, Trichomoniasis.

INTRODUCTION

The most common complaint in the reproductive age group is vaginal discharge. Symptomatic vaginal discharge is caused by inflammation due to infection of the vaginal mucosa. It occurs in 1-14% of all women in the reproductive age group and the prevalence of vaginal discharge in India is estimated to be 30%.¹ Inflammation of vagina leads to vaginitis. If untreated, it predisposes to pelvic inflammatory diseases, infertility, endometriosis, urethral syndrome, pregnancy loss, preterm labour. Among the cases of symptomatic vaginal discharge Bacterial vaginosis is commonest cause followed by Candidiasis and Trichomoniasis. Multiple infections can also coexist but these three conditions account for majority of all etiologies of abnormal vaginal discharge.² Most of the time a presumptive diagnosis is made based on the nature of the discharge (clinical diagnosis), which is often inaccurate and incomplete. This eliminates the laboratory component (Microbiological diagnosis) leading to treatment mismanagement. To address the limitations of clinical diagnosis, the World Health Organisation (WHO) developed and advocated the syndromic management approach. Syndromic approach of WHO is based on the identification of a relatively con-

stant combination of symptoms and signs (syndrome) and on the knowledge of the most common causative organisms of these syndromes and their antimicrobial susceptibility. The main disadvantage of this management is, the cost of over diagnosis and over treatment when multiple antimicrobials are given to patient where infection is caused by none or only one organism. Also to be considered are the risks of adverse drug reactions, alteration of normal vaginal flora and also the potential for developing antibiotic resistance in the community. The addition of a simple microscopic evaluation by Gram stain of the vaginal smear has evolved as a sensitive noncultural diagnostic technique for Bacterial vaginosis and Candidiasis.¹ Direct microscopy (wet smear) of the vaginal discharge to visualize the motile *Trichomonas vaginalis* has been determined to be as accurate as culture for the diagnosis of Trichomoniasis. The present study was conducted to determine that symptomatic vaginal discharge can not only be diagnosed by clinical examination but simple microscopic techniques such as wet smear and Gram stain can aid in the accurate diagnosis of this common condition and to know the most common cause of vaginal discharge in our set up.

Aims and objectives of the study were to evaluation of patients complaining of abnormal vaginal discharge by clinical and microscopic methods, to correlate the clinical and microscopic methods of vaginal discharge, to find out the most common cause of vaginal discharge in our set up and finally to detect Carcinoma cervix in early stages.

MATERIAL AND METHODS

This cross sectional study was conducted in patients attending Gynecology OPD, Government hospital, Pune from September 2009 to September 2011. 200 non pregnant patients of 20-70 years age group complained of vaginal discharge as their main or subsidiary symptom, which they either complained of by themselves or on questioning. The study reported here attempts to present the clinico-cytological evaluation of vaginal discharge in a survey of two hundred patients (200) suffering from the above complaint.

Inclusion Criteria

Age group of 20-70 years

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Complaining of vaginal discharge
Non pregnant women

Exclusion Criteria

Age group < 20 years and > 70 years
Pregnant women

Menstruation at the time of presentation

Recently biopsied or operated cervix

Clinically obvious carcinoma- ulcer, cauliflower growth.

Methods of the study

A detailed clinical history- the age of the women, socio economic condition, religion and marital status are noted. The complaints of white discharge per vagina was elaborated to include the

quantity, colour, consistency, odour, relationship to menstruation and other associated symptoms like itching vulva, burning sensation of vulva, urinary complaints, dyspareunia are enquired. In obstetric history a careful note was made regarding married life, number of pregnancies, number of abortions. In menstrual history relationship of leucorrhoea to menstrual cycle and date of last menstrual period is noted. Past history for having taken treatment for similar complaints. Personal history in regard to use of contraception, recent use of antibiotics, steroid therapy was obtained. Vulvovaginal, per speculum and bimanual examination carried out in all patients.

Clinical observation

The study included the examination of the vaginal status of all women in conjunction with gross characteristics of vaginal discharge. All 200 patients were classified into four categories on the basis of vaginal discharge characteristics. Tenderness of vaginal walls with inflammation of vulva and a green or yellow offensive irritating discharge associated with or without multiple small punctate strawberry spots on the vaginal vault and portio vaginalis of the cervix Trichomonal infection. Cases revealing redness of vaginal wall with white patches or plaques of cheesy material adherent to the vagina with profuse irritating curdy type of vaginal discharge constituting monilial infections. Cases revealing thin, frothy, homogenous, irritating discharge which was malodorous but showed no gross pathological changes of the vagina and of vulva was suggestive of Bacterial vaginosis. The remaining were assigned to unclassified category since the discharge presented mixed characteristics.

Cusco's speculum was introduced per vaginally and then vaginal material was obtained from the posterior fornix with a sterile swab stick for 1) Wet mount-with normal saline and 10% of KOH 2) Whiff test 3) Gram stain

Gram stain slide is interpreted by using Nugent score.

The diagnostic criteria used for microbiological diagnosis are:

1) **Bacterial vaginosis** – A Gram stain score of seven or more based on the scoring system by Nugent *et al.*

2) **Candidiasis** – If gram positive budding yeasts and pseudohyphae are seen on Gram stain.

3) **Trichomoniasis** – If wet smear microscopy is positive for motile Trichomonas vaginalis.

Haemoglobin estimation, peripheral blood smear examination, urine routine examination and microscopic examination carried out for each patient in OPD.

Pap (papinaculaou) smear taken in all the cases of the patients in reproductive age group.

This gave a cytological diagnosis and provided for the correlation between cytological changes, and vaginal infection

RESULTS

The study was conducted to determine the correlation between the clinical and microscopic diagnosis of white discharge per vaginum. White discharge per vaginum was the chief complaint in 200 cases attending Gynaecological OPD. The mean age of the study cases were 34.3 years. More than 42% were in their 30. It shows parity of women in the study. Majority (39%) of the cases were of parity 2, followed by parity 3 in 25%. The most common complaint was itching seen in 33.3% cases, followed by backache seen in 29%. Less common complaint was prolapse seen in 1% of cases.

This table shows the duration of white discharge per vaginum. Maximum cases are seen within first month of infection. In this study, 200 women presented with vaginal discharge. A diagnosis was obtained for 161 (80%) of them and in 39 (20%) the etiological diagnosis could not be found.

This table shows prevalence of bacterial vaginosis by clinical diagnostic approach was more than microbiological approach, while prevalence of candida and trichomoniasis by microbiological approach was more than clinical approach.

Out of 200 cases, clinically Bacterial vaginosis was found to be positive in 108 cases and microscopically in 106 cases. 96 cases were both clinically and microscopically positive for Bacterial vaginosis. While clinically Candidiasis was found to be positive in 45 cases and microscopically in 51 cases. 40 cases were both clinically and microscopically positive for Candidiasis. Clinically Trichomoniasis was found to be positive in 8 cases and microscopically in 6 cases. 5 cases were both clinically and microscopically positive for Trichomoniasis.

Clinical diagnosis has higher sensitivity (90.6%) for diagnosing bacterial vaginosis and moderate sensitivity (83.3%) for Trichomoniasis and (78.4%) for Candidiasis. Clinical

Age(years)	No of patients	(%)	Parity	No. of cases	%	Associated Morbidity	No. of cases	%
20-29	61	30.5	0	14	7.0	Back ache	58	29.0
30-39	84	42	1	27	13.5	Prolapse	2	1.0
40-49	40	20	2	77	38.5	Itching	67	33.5
>50	15	7.5	3	49	24.5	Dyspareunia	31	15.5
			4	12	6.0	Urinary Complaints	22	11.0
			5+	21	10.5	Pain abdomen	20	10.0

Table-1: Age and Parity distribution with Associated Morbidity

Duration	Number of cases	%
<1 month	65	32.5
1-3months	64	32.0
4-7months	36	18.0
8-11 months	8	4.0
≥12 months	27	13.5
Total	200	100

Table-2: Duration of vaginal discharge

Diagnosis	Clinical diagnosis n=200(%)	Microscopic diagnosis n=200(%)
Bacterial vaginosis	108(54)	106(53)
Candidiasis	45(22.5)	51(25.5)
Trichomoniasis	8(4)	6(3)
Undiagnosed	39(19.5)	37(18.5)

Table-3: Prevalence of various infection based on two diagnostic approaches

Clinical Findings	Microscopic Findings		Total
	Positive	Negative	
Bacterial vaginosis			
Positive	96(88.9%)	12(11.1%)	108(54%)
Negative	10(10.9%)	82(89.1%)	92(46%)
Total	106	94	200
Candidiasis			
Positive	40(88.9%)	5(11.1%)	45(22.5%)
Negative	11(7.1%)	144(92.9%)	155(77.5%)
Total	51	149	200
Trichomoniasis			
Positive	5(62.5%)	3(37.5%)	8(4%)
Negative	1(0.5%)	191(99.5%)	192(96%)
Total	6	194	200

Table-4: Comparison of clinical and microscopy Findings in each infection

Clinical diagnosis	Bacterialvaginosis (%)	Candidiasis (%)	Trichomoniasis(%)
Sensitivity	90.6	78.4	83.3
Specificity	87.2	96.6	98.4
Positive Predictive	88.9	88.9	62.5
Negative Predictive	89.1	92.9	99.5

Table-5: Validation of clinical diagnosis with microbiological diagnosis as the gold standard

Microscopic diagnosis	PAP Smear diagnosis						Total
	Normal study	Inflammatory smear	ASCUS	LSIL	HSIL	Bacterial Vaginosis	
Bacterial vaginosis	20	57	2	2	1	24	106
Candidiasis	15	36	-	-	-	-	51
Trichomoniasis	3	2	-	1	-	-	6
Undiagnosed	12	20	-	1	-	4	37
Total	50(25%)	115(57.5%)	2(1%)	4(2%)	1(0.5%)	28(14%)	200

Table-6: PAP smear results

Clinical Diagnosis	Rekha et al (%) ⁴				Present study (%)			
	Sensitivity	Specificity	PPV	NPV	Sensitivity	Specificity	PPV	NPV
Bacterial vaginosis	97.1	36.8	44.7	96.1	90.6	87.2	88.9	89.1
Candidiasis	58.3	82.0	41.2	90.1	78.4	96.6	88.9	92.9
Trichomoniasis	99.9	99.9	99.9	99.9	83.3	98.4	62.5	99.5

Table-7: Efficacy of clinical diagnosis of vaginal Efficacy of clinical diagnosis of vaginal

diagnosis has higher specificity (98.4%) for Trichomoniasis and(96.6%) for Candidiasis, and moderate specificity for Bacterial vaginosis. Trichomoniasis has got the negative predictive value of 99.5%

Pap smears revealed that 7 (3.5%) patients were having various grades of cervical dysplasia. Cytology reports were found to be normal in 25% of cases and 57.5% had inflammatory smears, and 14% had Bacterial vaginosis.

DISCUSSION

This cross sectional study of 200 patients was conducted in women attending gynaecology outpatient department at a Government Medical College Hospital, from September 2009 to September 2011. Two hundred women were included in the study. The etiological diagnosis was reached in 161 (80.5%) of the patients included. In the remaining 19.5% of the patients, diagnosis could not be made with the microbiological diagnostic approach. Similarly other studies showed that in10 to 58% of the patients complaining of vaginal discharge, diagnosis could not be reached using any of the diagnostic approaches under consideration.³ This group of patients probably may have normal physiological discharge or less frequently viral vaginitis, aerobic vaginitis or vaginal lactobacillosis which are not routinely detected. Vaginal infections commonly occur in women of reproductive age i.e between 25-35 years as noted in several other studies. In Rekha et al⁴ age group was 26-30years while in Jyothi et al¹ it was 27-31years. In our study we found most common in 30-35years age group.

In present study patients sought medical help within 1-3months, when compared to Rekha et al⁴, where they sought medical help at least 1-6 months after the onset of symptoms. This showed a tendency towards decreased sequelae or complications associated with the infections.

White discharge per vaginum was the chief complaint of all

the patients included in the study. In this study, itching was the commonest symptom. Similar findings were noted by other authors.

Prevalence of bacterial vaginosis, candidiasis, trichomoniasis in the present study of 2011 was 54%, 22%, 4% respectively.

In the study of 2010 by Rekha et al⁴ the prevalence of bacterial vaginosis, candidiasis and trichomoniasis was 47%, 10% and 3% respectively. Studies conducted by Rao et al² in 2004 showed 26%, 38% and 1.2% prevalence respectively while Khan et al⁵ in 2009 showed 28%, 12% and 5% respectively. Ryan et al⁶ in 1998 showed 30% prevalence of bacterial vaginosis and 30% of candidiasis. Similarly Snehalata et al⁷ in 2000 showed 26% and 10% prevalence and Sanchez et al⁸ in 1998 showed 30% and 7.3% prevalence respectively.

Efficacy of clinical diagnosis of vaginal infections in two different studies:

Bacterial vaginosis was the commonest diagnosis by the Clinical approaches in this study. When the Clinical diagnostic approaches were compared with the microbiological diagnosis, clinical diagnosis was noted to have moderate sensitivity for Bacterial vaginosis and Trichomoniasis, moderate specificity for Trichomoniasis; lower sensitivity for Candidiasis and lower specificity for Bacterial vaginosis. This implies that if the clinical approach is used to diagnose the infections, Bacterial vaginosis and Trichomoniasis would be over treated while Candidiasis would be under treated. Also the positive predictive value is low for Trichomoniasis with moderate negative predictive values for all infections.

Our analysis of the clinical approach showed that it does not deal adequately with the management of abnormal vaginal discharge. By adding simple tests as recommended by WHO, the sensitivity of Clinical diagnosis for all the vaginal infections improved, but only minimal change was noted in the specificity. These findings were similar to studies done by some authors which show that addition of simple Gram staining of the vaginal smears to the clinical diagnosis has a very good sensitivity (89-93%) but a low specificity of only 70%. WHO recommends that all women complaining of abnormal vaginal discharge be treated empirically. This study showed that 18.5% of patients had no Trichomoniasis, Bacterial vaginosis or Candidiasis by the microbiological diagnostic approach while the clinical approach diagnosed 22.5% of the cases with candidiasis only. If blanket treatment is advocated to all the women complaining of abnormal vaginal discharge then majority of the women would receive metronidazole and antifungal therapy unnecessarily.

Over diagnosis has financial as well as social consequences in the community.⁹ Oral metronidazole is associated with anorexia, nausea, vomiting. Antifungal therapy is associated with renal and hepatic complications, hypersensitivity reactions, nausea and vomiting, flatulence that's why FDA condemns blanket therapy and combination therapy for treatment of vaginal infections without proof of infections.¹⁰

Pap smears revealed that 7 (3.5%) patients out of 200 were having various grades of cervical dysplasia as compared to another study in which 8 (2.67%) patients out of 300 cases were having cervical intraepithelial neoplasia.¹¹ However it was not significant enough to prove their causation in carcinoma cervix, but still their association with carcinoma

cervix cannot be denied. And it was concluded that cervical intra epithelial neoplasia is common in our set up and can be diagnosed early by Pap smears.

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CONCLUSION

Pap smears revealed that 7 (3.5%) patients out of 200 were having various grades of cervical dysplasia as compared to another study¹¹ in which 8 (2.67%) patients out of 300 cases were having cervical intraepithelial neoplasia. However it is not significant enough to prove their causation in carcinoma cervix, but still their association with carcinoma cervix cannot be denied. Hence, regular follow up with Pap smear is mandatory.

It is concluded that cervical intra epithelial neoplasia is common in our set up and it can be diagnosed early by Pap smears. In a low resource setting, primary clinical diagnosis based on simple microscopy, pH and amine test with WHO algorithms should be made prior to treatment. Further studies are needed to know the utility of the various diagnostic approaches and the best approach that could be implemented in the rapid and accurate diagnosis of symptomatic vaginal discharge.

REFERENCES

1. Thulker J, Kriplani A, Aggarwal N, et al. Indian J Med Res. 2010;131:83-87.
2. Rao P, Devi S, Shriyah A, et al. Indian J Med Microbiol. 2004;22:47-50.
3. Donder G, Vereecken A, Bosmans E, et al. BJOG. 2002;109:34-43.
4. Rekha S, Jyothi, et al. Comparison of visual, clinical and microbiological diagnosis of symptomatic vaginal discharge in the reproductive age group. Int J Pharm Biomed Res. 2010;1:144-148
5. Shazia K, Fauzia, Shagufta A, et al. Ayub Med Coll Abbottabad. 2009;21:12-17
6. Ryan CA, Zidouh A, Manhart LE, et al. Sex Transm Infect. 1998;74:95-105.
7. Snehalata V, Vibha T, Rajendra P et al. Sex Transm Infect. 2000;76:303-306.
8. Sanchez E, Koutsky A, Sanchez J, et al. Sex Transm Infect. 1998;74:85-94.
9. Hawkes S, Morison L, Foster S et al. Lancet, 1999;354:1776-1781.
10. Vishwanath S, Talwar V, Prasad R. Sex Transm Infect. 2000;78:303-306.
11. Sania T, Khattak, Tabassum Naheed, et al. Journal of Medical Sciences. 2006;4:2-8

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