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Comparison of Laboratory Diagnosis and Syndromic Approach in the Management of Symptomatic Vaginal Discharge

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Abstract: ***Abnormal vaginal discharge is the common complaint by the patients attending gynecologyoutpatient departments. It can be physiological or pathological. Etiological diagnosis in the laboratory will help the physician in giving proper treatment compared to syndromic approach. This study was conducted to know the etiology of symptomatic vaginal discharge among reproductive age group women. This study was conducted on reproductive age group women i.e. 15-45 years of age. For diagnosing bacterial vaginosis Amsel's and Nugent's criteria were used. Trichomoniasis cases were detected by observing the characteristic motility in wet mount. Candidiasis was diagnosed by KOH mount, Gram stain and culture on Sabouraud's dextrose agar.Among 100 cases studied bacterial vaginosis (27%) was predominant cause for vaginal discharge followed by candidiasis (19%) and trichomoniasis (9%). Predominant age group affected with vaginal infections was 26-30 years.By using Nugent's criteria 27% of cases were diagnosed as having bacterial vaginosis and by using Amsel's criteria 20% were diagnosed as having bacterial vaginosis. The prevalence of vaginal infections diagnosed clinically was 65% and those diagnosed in laboratory was 52%.Etiological diagnosis is much useful for better management of vaginal infections and also to avoid unnecessary use of antimicrobials and development of microbial drug resistance.***

Keywords: symptomatic vaginal discharge, syndromic approach, etiological diagnosis

1. Introduction

Abnormal vaginal discharge is a common clinical problem among sexually active women. Excessive vaginal discharge may be physiological or pathological.

A wide range of organisms may be associated with leucorrhoea, but the roles of some are still uncertain. Most common cause for symptomatic vaginal discharge is bacterial vaginosis followed by vaginitis.Bacterial vaginosis represents a complex change in the vaginal flora characterized by a marked reduction in the Lactobacilli and an increase in Gardneralla vaginalis, Peptostreptococci, Mycoplasma hominis, anaerobic Gram negative bacilli belonging to the genera Prevotella, Porphyromonas, Bacteroides, Mobilincus etc. Organisms causing vaginal pathogenicity, sometimes can predispose to significant morbidity in the form of pelvic inflammatory diseases,infertility,urethralsyndrome,low birth weight of infants,chorioamnionitis, late miscarriage, preterm labour and pregnancy loss etc. [1]

Women with bacterial vaginosis or vaginitis are also more likely to be coinfected with Herpes simplex virus type 2, Neisseria gonorrhea and HIV. [2]

Etiological diagnosis in laboratory will definitely help the physician in giving accurate treatment compared to conventional syndromic approach,which is usually followed by physicians in treating abnormal vaginal discharge. This study was conducted to know the etiology of symptomatic vaginal discharge and to know the prevalence of bacterial vaginosis and vaginitis among the reproductive age group.

2. Material and Methods

This study was conducted in a tertiary care level hospital. Women in reproductive age group of 15- 45 years complaining abnormal vaginal discharge were included in the study.Women of age group more than 45 years and less than 15 years and pregnant women were excluded.

Sample Collection
Three vaginal swabs were collected from posterior fornix. The character of vaginal discharge i.e. colour, nature, odour were observed. One of theswabs was used for doing Gram staining and second swab was used for doing wet mount with normal saline to observe motility of Trichomonas vaginalis. Third swab was inoculated on SDA withantibiotics and incubated at 25^0c and 37^0c for isolation of Candida species.

P^H testing
P^H of vaginal discharge was recorded at bed side itself using standard P^H indicator paper with range 1-14.

Whiff test (Amine test)

The amine test was done by adding few drops of 10% KOH (Potassium hydroxide) solution directly over vaginal secretions smeared on glass slideto find out if there was emission of amine like odour.

Wet mount
A drop of vaginal secretions emulsified in saline was taken over glass slide, mounted with cover slip and was examined under low and high power objective. The wet preparation was assessed for presence of clue cells,pus cells (inflammatory cells), motile trophozoites of Trichomonas vaginalis and budding yeast cells and pseudohyphae. Clue

cells were identified as squamous epithelial cells with bacilli adherent to surface obscuring the cell margin.

Gram stain

One of the swabs was smeared over a clean dry microscopic slide and was stained by Gram staining technique. The smear was examined for presence of clue cells, inflammatory cells,Gram negative or Gram variable organisms and budding yeast cells. Clue cells were identified as squamous epithelial cells covered with Gram negative to Gram variable pleomorphic coccobacilli obscuring the cell margins. Trichomoniasis was diagnosed by observing characteristic twitching motility of trophozoites in wet mount along with inflammatory cells.

Vaginal Candidiasis was diagnosed by observing Gram positive budding yeast like cells with or without pseudohyphae along with inflammatory cells in Gram stain done directly from vaginal swab and also by culture. On SDA cream coloured, smooth, pasty colonies were observed. After that colonies were identified by Gram stain. Differentiation of Candida albicans from non-Candida albicans was done by Germ tube test, Chlamydospore production and growth at 42-45^{0}c. Clinico microbiological diagnosis of bacterial vaginosis was made on basis of presence of any three of the following four criteria described by Amsel et al. 1984 and also by Nugent's scoring system.

Amsel's criteria [3]

A thin greyish, homogenous, fishy smelling vaginal discharge.

Vaginal P^H greater than 4.5.

The presence of 'clue cells' in the Gram stain of vaginal discharge. The positive amine test in which fishy odour released after adding 10% KOH to vaginal fluid. Nugent's scoring system [4]

Organism morphotype	Number per oil immersion field	Score
Gram positive bacilli (Lactobacilli)	>30 5-30 1-4 <4 0	0 1 2 3 4
Gardenerella vaginalis and Bacterioides (Small Gram negative to variable bacilli)	>30 5-30 1-4 <1 0	4 3 2 1 0
Mobiluncus (curved Gram variable bacilli)	>5 <1-4 0	2 1 0

Scoring was performed for individual organism morphotype and scores were added toget the total score which was interpreted as follows

Score	Interpretation
0-3	Normal
4-6	Intermediate
7-10	Bacterial vaginosis

3. Results

A total 100 patients with symptomatic vaginal discharge were studied. More number of patients were in the age group of 26-30 years.

Table1: Age wise distribution of cases

Age	No. with symptomatic discharge
15-20	11
21-25	14
26-30	35
31-35	26
36-40	9
40-45	5

Out of 100 cases studied 27% were having bacterial vaginosis, 19% have vaginal candidiasis and 6% were having Trichomoniasis. In 48% of cases no significant pathogen was isolated.

Most common age group affected by bacterial vaginosis was 26-30 years,by vaginal candidiasis was 26-35 years and by trichomoniasis was 21-30 years.

Table 2: Age and type of vaginal infection

Age group	Bacterial vaginosis	Vaginal candidiasis	Trichomoniasis	No specific organism found
15-20	2(7.40%)	1(5,26%)	0(0%)	8(16.66%)
21-25	6(22.22%)	3(15.78%)	2(33.33%)	3(6.25%)
26-30	9(33.33%)	8(42.10%)	3(50%)	15(31.25%)
31-35	7(25.92%)	4(21.05%)	1(16.66%)	14(29.16%)
36-40	2(7.40%)	2(10.52%)	0(0%)	5(10.41%)
40-45	1(3.70%)	1(5.26%)	0(0%)	3(6.25%)

Among the bacterial vaginosis cases, mucoid discharge (85.18%) with pruritus (44.44%) were predominant symptoms and in vaginal candidiasis pruritus and vulvo vaginal soreness (78.94%) and curdy white discharge (68.42%) were predominant symptoms. In Trichomoniasis greenish frothy odorous discharge (66.66%) was the predominant symptom.

Table 3: Presentingsymptoms and signs

Signs and symptoms	Bacterial vaginosis	Vaginal candidiasis	Trichomoniasis
Dysuria	8(29.62%)	5(26.31%)	1(16.66%)
Pruritus	12(44.44%)	15(78.94%)	3(50%)
Lower abdominal pain	4(14.81%)	3(15.78%)	1(16.66%)
Vulvo vaginal soarness	2(7.40%)	15(78.94%)	1(16.66%)
Nature of the discharge:			
Watery/mucoid	23(85.18%)	2(10.52%)	1(16.66%)
Thick white/curdy white	2(7.40%)	13(68.42%)	1(16.66%)
Greenish/frothy/odorous	2(7.40%)	2(10.52%)	4(66.66%)

In the present study by using Amsel's criteria20(20%) and by Nugent's criteria 27(27%) werediagnosed as having bacterial vaginosis.

Table 4: Comparision of diagnosis of bacterial vaginosis by Amsel's and Nugent's criteria

Methods of diagnosis		Diagnosis of bacterial vaginosis by Nugent's criteria			p value
		Nugent's score >7 n =27	Nugent's score <7 (0-6), n =73	total n=100	< 0.001
Amsel's criteria	Bacterial vaginosis	18	2	20	
	Normal	9	71	80	

Among 100 cases of vaginal discharge studied the prevalence of vaginal infections diagnosed clinically was 65% and diagnosed in laboratory was 52%.

Table 5: Clinical Vs laboratory diagnosis of abnormal vaginal discharge

Total patients with abnormal vaginal discharge	Clinical diagnosis	Laboratory diagnosis
100	65%(65%)	52(52%)

Among 100 cases of abnormal vaginal discharge studied,34 cases were diagnosed clinically as having bacterial vaginosis, but only 27 were diagnosed in laboratory. Vaginal candidiasis was diagnosed clinically in 22 cases but in laboratory 19 cases were diagnosed. 9 and 6 cases of Trichomoniasis were diagnosed clinically and in laboratory respectively.

Table 6: Clinical and laboratory diagnosis in bacterial vaginosis and vaginitis

	Clinical diagnosis	Laboratory diagnosis
Bacterial vaginosis	34	27
Vaginal candidiasis	22	19
Trichomoniasis	9	6
Normal	35	48

4. Discussion

In the present study out of 100 cases of symptomatic vaginal discharge studied, microbiological or etiological diagnosis was done in 52% of cases.In 48% of cases diagnosis could not be reached by using any of the approaches under consideration. This group of patients probably might have normal physiological discharge or less frequently other causes like mycoplasma, ureaplasma infections or infective and noninfective causes affecting cervix.

In our study more number of abnormal vaginal discharge cases were observed between the age group of 26-30 years (35%). This was in correlation with Rekha et al (40%). [1]

In the present study bacterial vaginosis(27%) was the predominant cause of symptomatic vaginal discharge followed by vaginal candidiasis (19%) and trichomoniasis (6%). This result is in correlation with the study of Rekha et al (33%) [1].

Bacterial vaginosis (33.33%) was more common between age group of 26-30 years. This is in correlation with the study of P.Madhavanan et al [2].

Trichomoniasis was more common between age group of 21-30 (83.33%). This is in correlation with the studies of S.Rekha et al and Md.Abdullah yusuf et al [5] who also showed predominance of trichomoniasis in the age group of 15-35 years (92%) and 15-25 years (52%) respectively. Candidiasis was more common in the age group 26-35 years (63.15%). This is in correlation with the study of Md.Abdullah Yusuf et al (64.9%) [5]

Among the 19 strains of Candida species isolated, Candida albicans was predominant species 12(63.15%) compared to non-Candida albicans species (36.84%). This was in correlation with the study of S.I.Nwadioha (85%). [6]

Among the bacterial vaginosis cases mucoid discharge (85.18%) and pruritus (44.44%) were the predominant symptoms in the present study, but S.Rekha et al showed the pruritus was the predominant symptom compared to abnormal discharge.

In the present study among the vaginal candidiasis cases pruritus (78.94%) and vulvo vaginal soarness (78.94%) were predominant symptoms observed. But S.I.Nwadioha et al observed pruritus as predominant symptom in 60% of cases. [6] In the present study among trichomoniasis cases greenish frothy odorous discharge (66.66%) was the predominant symptom observed. This is in correlation with some studies. [7]

In present study by using Amsel's criteria 20%, and by using Nugent's criteria 27% were diagnosed as having bacterial vaginosis. Even though Nugent's criteria is more preferable, Amsel's criteria also can be used for diagnosis of bacterial vaginosis.p value <0.001. This was in correlation with some studies. [8]

Among 100 symptomatic vaginal discharge cases studied 65% were diagnosed clinically as having vaginal infection by syndromic approach, but only52% were diagnosed in laboratory microbiologically by using various methods. This is in correlation with the study of S.I.Nwadioha et al (54.3%). A high prevalence rate of diagnosis in laboratory microbiologically was shown by Rekha S et al 72% and a low prevalence of 33.14% was shown in the study of Prabha M et al[9] . There is wide variation in syndromic approach and laboratory approach for diagnosis of vaginal infections. This variation may be because sometimes physiological vaginal discharge will be misinterpreted by gynecologists as vaginitis or vaginosis.

5. Conclusion

In conclusion bacterial vaginosis was the predominant cause for abnormal discharge compared to vaginal candidiasis and trichomoniasis in the reproductive age group women. Abnormal vaginal discharge due to various infections was more common between age group of 26-30 years. Mucoid discharge and pruritis were predominant symptoms in bacterial vaginosis. Pruritis ,vulvovaginal soarness in vaginal candidiasis and greenish frothy odorous discharge were predominant symptoms in trichomoniasis. Even though Nugent's criteria is preferable for diagnosis of bacterial vaginosis, Amsel's criteria can also be used. In the management of symptomatic vaginal discharge there is a variation in clinical diagnosis (65%) and laboratory

diagnosis (52%). Etiological diagnosis is much useful for better management of vaginal infections and also to avoid unnecessary use of antimicrobials and development of microbial drug resistance.

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