Microbial Etiological Agents in Clinical Suspected Vaginitis Attending in Obstratic and Gynaecology Outpatient Department of Tertiary Care Hospitals

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Bacterial vaginosis, trichomoniasis and vaginal candidiasis are the most common infectious causes of vaginitis in OPD of obstratic and gynaecology department in tertiary care hospitals. Vaginitis cannot be adequately diagnosed solely on the basis of symptoms or physical examination, so some laboratory methods are required for accurate diagnosis and better treatment. To identify the most common microbial etiological agents consisted with clinical findings in vaginitis fifty clinically suspected female patients attending in the Gynaecology and Obstetrics outpatient department of Khwaja Yunus Ali and Prime Medical College hospital with vaginal complaints were included in this study. Diagnosis is commonly made using the Amsel criteria, which include vaginal pH greater than 4.5, positive whiff test, milky discharge, presence of clue cells, pseudohyphae or budding yeast cells, trophozoite on microscopic examination of vaginal fluid or swab that were potentially associated with commonly occurring vaginal organisms. Among fifty vaginal swabs 29 (58%) laboratory test results were consisted with clinical finding of the patients. Ten (20%) bacterial vaginosis were associated with findings of clue cells, Gram negative coccobacilli in Gram stained high vaginal swab smear, amine odor on application of potassium hydroxide solution to the discharge (Whiff test). Thirteen (26%) of vaginal candidiasis was associated with the presence of pseudohyphae or budding yeast cells on microscopic examination and the lack of clue cells. *Trichomonas vaginalis* was relatively less common only 06 (12%). The cause of vaginitis may be easily diagnosed when typical findings appear in microscopy. However, the proper performance of individual symptoms, signs, and laboratory tests often makes it easier to identify the cause of vaginal symptoms and for better treatment.

[Dinajpur Med Col J 2016 Jan; 9 (1):71-77]

Key words: Vaginitis, Vaginosis, Candidiasis, Trichomoniasis

Introduction

Vaginitis is defined as a spectrum of conditions that cause vaginal and sometimes vulvar symptoms, such as itching, burning, irritation, odor, and vaginal discharge. Vulvovaginal complaints are one of the most common reasons for gynecological consultation.[1] Clinicians have traditionally diagnosed vaginal candidiasis, bacterial vaginosis, and vaginal trichomoniasis using some combination of physical examination, pH, the wet mount, and the whiff test.[2] The patient's history and the physical examination should guide the choice of laboratory studies, and a complete physical examination that includes a thorough examination of both the external and internal genitalia will yield additional important

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information.[3] Empirical treatment is unacceptable, considering the low cost of whiff test, Gram staining, normal saline and KOH preparations compared to the cost of inappropriate treatment. When combined, these tests have a sensitivity and specificity of 81 and 70 percent, respectively, for bacterial vaginosis; 84 and 85 percent for vulvovaginal candidiasis; and 85 and 100 percent for trichomoniasis when compared with the DNA probe standard[(4)]. In a review of studies published between 1966 and 2003, bacterial vaginosis was diagnosed in 22% to 50% of symptomatic women, vulvovaginal candidiasis in 17% to 39% and trichomoniasis in 4% to 35%. Approximately 30% of symptomatic women remained undiagnosed after clinical evaluation.[5] Some of the infectious causes of abnormal discharge may lead to serious complications with inappropriate treatment.[6] Vulvovaginal candidiasis accounts for approximately one-third of the vaginitis cases seen in hospital outpatient department practice. Some workers have estimated that 75% of adult women suffer at least one episode of vulvovaginal candidiasis during their lifetimes.[7] Inhibition of normal bacterial flora by the use of broad-spectrum antibiotics favors the growth of yeasts and therefore predisposes to the development of vulvovaginal candidiasis. Overgrowth of yeast may favored by high estrogen levels, use of oral contraceptives, use of tight insulating clothing and suffering from cell mediated immunodeficiency.[8] Patients generally complain of perivaginal pruritus, often with little or no discharge. On clinical examination, the labia may be pale or erythematous, and excoriation often is present. Shallow, linear ulcerations, especially on the posterior portion of the introitus, are common. A wet mount to which 10-20% KOH is added will reveal fungi in most of the infected women. The discharge usually contains relatively few polymorphs.[b] *Trichomonas vaginalis* is an anaerobic, flagellated, motile protozoan parasite, approximately the size of a polymorphonuclear leukocyte. Usually are sexually transmitted, only occasionally is acquired nonvenereally.[10] It is found with high prevalence in some institutionalized populations. Infected women usually note vaginal discharge and vulvovaginal soreness or irritation. Dysuria and dyspareunia are common. Symptoms often being or exacerbate during the menstrual period. Examination usually reveals a copious, rather loose discharge that pools in the posterior vaginal fornix and often in yellow or green. Trichomonas may be identified in vaginal secretions using the wet-mount technique, which will detect them in most of the suspected cases. *Trichomonas vaginalis* is most easily recognized by its characteristic movements. The wet mount generally also reveals large numbers of white blood cells.[10,11] Most women who consult their physicians with vaginal symptoms have a specific condition first described by Gardner and Dukes in 1955.[12] Seen primarily in sexually active women, it is characterized by a nonirritating, malodorous vaginal discharge. Though previously called nonspecific vaginitis and originally attributed to infection with *Gardnerella vaginalis*, there is now considerable evidence that bacterial vaginosis is actually a synergistic infection involving not only *Gardnerella vaginalis* but also certain anaerobic bacteria.[13] Bacterial vaginosis was described initially in sexually active women and is common in populations with a high prevalence of STDs. The precise contribution of sexual transmission to the overall epidemiology of the condition remains controversial. Recurrence in the absence of sexual re-exposure is well described. Affected women usually are sexually active and often complain predominantly of vaginal odor. Most of the patients also notice a mild to

moderate vaginal discharge. On speculum examination, the vaginal walls usually appear uninflamed. The vagina often contains a grayish white, thin, homogenous discharge manifesting small bubbles. A Gram stained high vaginal smear reveals clue cells, which are vaginal epithelial cells studded with tiny coccobacilli. A positive whiff test is found in most of the cases of bacterial vaginosis.[14] Other vaginal conditions to consider include vaginitis due to foreign bodies, herpes simplex virus, human papilloma virus and much less commonly, *Mycobacterium tuberculosis*, salmonellae, actinomycetes, schistosomes, and pinworms. *Neisseria gonorrhoeae* and *Chlamydia trachomatis* can cause true vaginitis in prepubescent girls.[15] Noninfectious causes of vulvovaginal complaints include genital neoplasms, chemical irritation, or vulvar vestibulitis. Physiologic vaginal fluid can sometimes be perceived by the patient as vaginal discharge.[16,17] Considering the facts about vulvovaginitis, the present study is designed to perform common laboratory methods to detection of etiological factors associated with the clinical illness. This may help in giving appropriate treatment and avoid the empirical combination therapy containing several drugs.

Methods

This cross sectional study was done in fifty clinically suspected female patients attending in the Gynaecology and Obstetrics outpatient department of Khwaja Yunus Ali Medical College hospital and Prime Medical College Hospital with vaginal complaints during the period of from June 2011 to April 2013. After explaining the facts, informed consent was taken from each patient. Evaluation of relevant history, physical and speculum examination, whiff test (fishy amine odor when 10% potassium hydroxide solution is added) was performed by a consultant gynecologist. High vaginal swab specimen was taken also from each patient by gynecologist and send immediately to the department of laboratory services of Khwaja Yunus Ali Medical College Hospital and Prime Medical College hospital for laboratory tests. Several wet mount slides were prepared with normal saline and 10% KOH solution and examined under light microscope for detection of pus cell, clue cell, fugal yeast cell, pseudohyphae or budding yeast cell and Trophozoite of *Trichomonas vaginalis*. Gram stain technique was performed on high vaginal swab specimen, after smear preparation, drying and heat fixation. Clue cells, pus cells, Gram positive bacilli (Lactobacilli) and Gram negative coccobacilli were found clearly in Gram stained vaginal smears in corresponding cases. All the clinical and laboratory data were preserved in a designed record sheet and compiled accordingly.

Results

Among the 50 clinically suspected cases of vaginitis, 13(26%) were diagnosed as vaginal candidiasis in laboratory. Bacterial vaginosis and trichomoniasis were diagnosed in 10 (20%) and 06 (12%) cases respectively. No consistent laboratory evidence was found in 21 (42%) cases and considered as non-specific findings.

Table I: Etiological factors of vulvovaginitis in clinically suspected cases (N=50)

Findings	Number	Percentage
Trichomoniasis	06	12.0
Bacterial vaginosis	10	20.0
Vaginal candidiasis	13	26.0
Non-specific findings	21	42.0
Total	50	100

Table II: Results of whiff test of vaginal secretion (N=50)

Whiff test	Number	Percentage
Positive	13	26
Negative	37	74

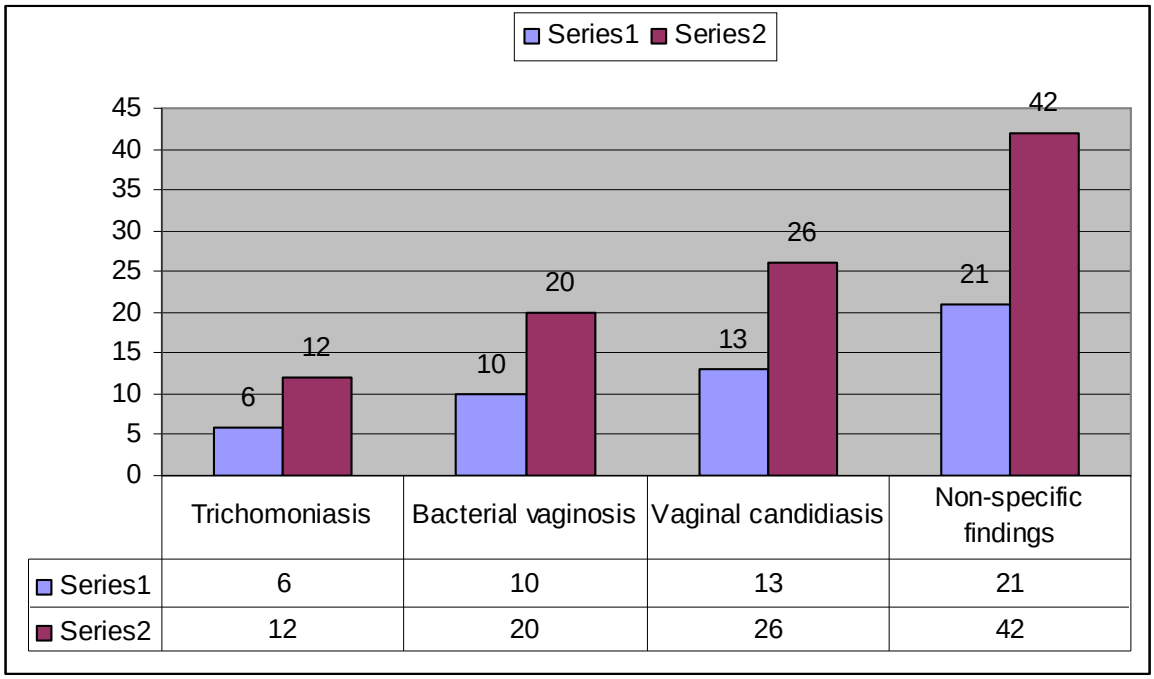

Figure 1. Etiological factors of vulvovaginitis in clinically suspected cases. (N=50)

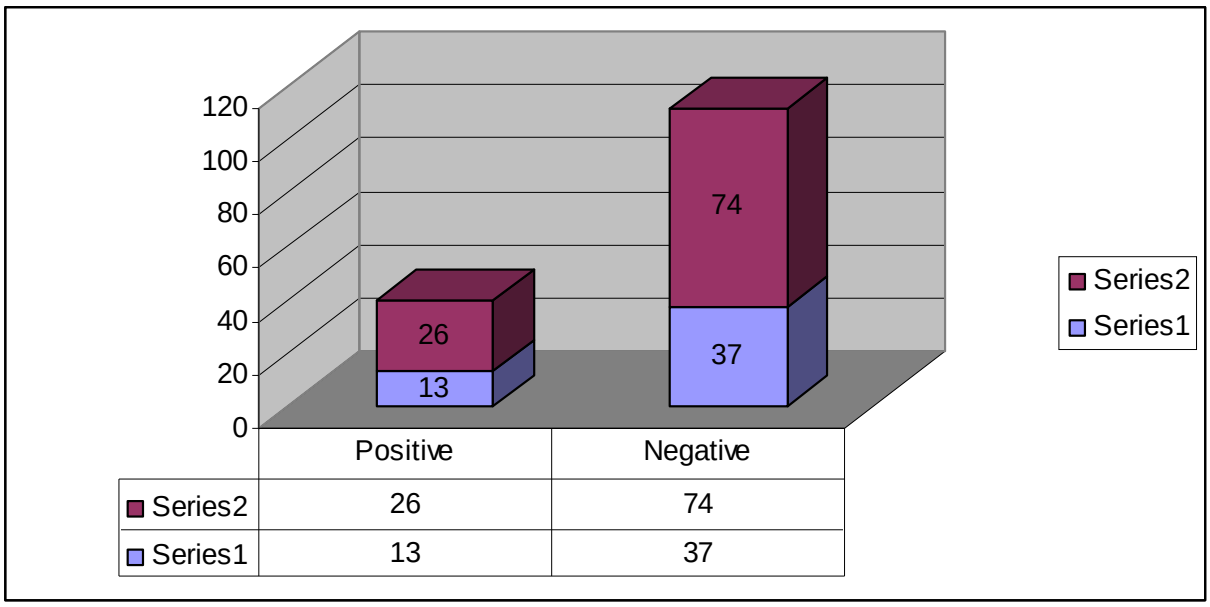

Figure 2. Results of whiff test of vaginal secretion (N=50)

Table III: Results of wet mount technique of high vaginal swab (N=50)

Findings	Number	Percentage
Fungal yeast cell with or without pseudohyphae	13	26
Trichomonas vaginalis	06	12
Clue cells	10	20
Non-specific findings	21	42

Table IV: Results of Gram stain smear examination of high vaginal swab (N=50)

Findings	Number	Percentage
Fungal yeast cell	13	26
Clue cell with Gram negative coccobacilli	10	20
Pus cell with bacteria	06	12
Non-specific findings	21	42

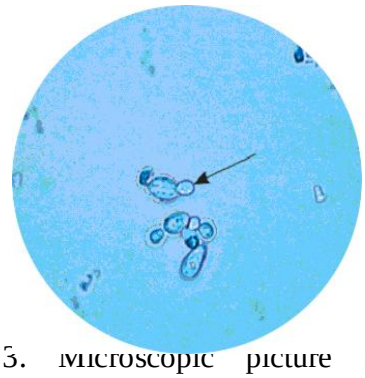

Figure 3. Microscopic picture showing Candida species (at 400x). Budding yeast cell and pseudohypha visible (arrow)

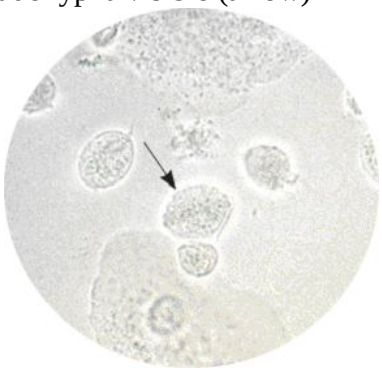

Figure 4. Microscopic picture showing Trophozoite of T.vaginalis (at 400x) in vaginal wet-mount preparation. Motile trichomonas with flagella slightly larger than a leucocyte may be seen (arrow)

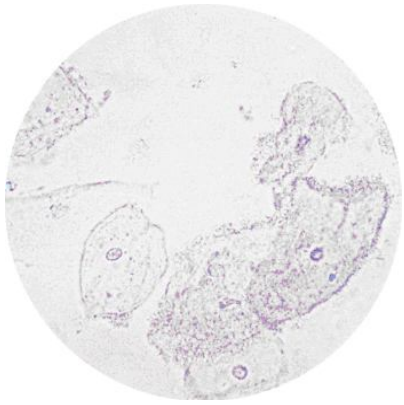

Figure 5. Microscopic picture showing clue cells (at 400x). Vaginal epithelial cells with borders obscured by adherent coccobacilli seen on saline wet-mount preparation

Discussion

Candidiasis is one of the common causes of vaginal symptom that bring the patients to physician. A wet mount to which 10-20% KOH is added will reveal fungi in 40-60% of infected women[1]. In our study, there is only 26% cases were diagnosed as vaginal candidiasis. History of the patients reveal there were very low frequency of predisposing factors that are usually favors the growth of candida in vaginal epithelium.

Among the 50 clinically suspected cases of vaginitis, 10 (20%) were diagnosed as bacterial vaginosis and whiff test was positive in 13 (26%) cases. Whiff test was done either during patient examination or by the time of KOH wet mount preparation and done by two different persons. The interpretation of the test result depends on the presence of intact olfactory function of the examiners. The test is positive in more than 90% of patients with bacterial vaginosis and in many patients with trichomoniasis.[6]

Wet mount and Gram stain techniques both are efficient for detection of fungal yeast cell

and pseudohyphae in vaginal secretions. For detection of *Trichomonas vaginalis* in the wet mount preparation is only effective as the organism is recognized by their characteristic motility. There is no role of Gram stain technique for detection of *Trichomonas vaginalis*.

Clue cells are clearly detected in Gram stained vaginal secretions smear. Gram positive epithelial cells covered with tiny Gram negative coccobacillary forms are clue cells and are associated with bacterial vaginosis. Clue cells are best recognized by observing the edges of epithelial cells, which may be obscured by the adherent coccobacilli. Some cells are so heavily encrusted that the nuclei are obscured. Wet mount preparations reveal clue cells also but less efficient than in Gram stained smear, as the Gram properties of the coccobacilli is important. Irritant contact dermatitis and allergic contact dermatitis are two noninfectious causes of vaginitis. They may be associated with use of feminine hygiene products or contraceptive materials, among many other causes. Atrophic vaginitis can manifest clinically with symptoms of vaginal dryness, itching, discharge, irritation, and dyspareunia. It affects 10 to 40 percent of women who have conditions associated with estrogen deficiency.[4]

Conclusion

The Microbial cause of vaginal complaints may be easily diagnosed when typical findings appear in microscopy. However, the poor performance of individual symptoms, signs, and laboratory tests often makes it problematic to identify the cause of vaginal symptoms. The patient's history and the physical examination should guide the choice of laboratory studies, and a complete physical examination that includes a thorough examination of both the external and internal genitalia will yield additional important information. Empirical treatment is unacceptable, considering the low cost of whiff test, Gram stain, saline and KOH wet mount preparations compared to the cost of inappropriate treatment. So Diagnosis is based on history and physical findings, supplemented by vaginal pH levels, vaginal wet- mount preparation and, rarely, culture or cytology.

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