

A Study on the Common Microorganisms Causing Vaginitis

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ABSTRACT:

BACKGROUND:

Inflammation of the vaginal mucosa is a common clinical syndrome. Women often complain of an abnormal discharge and possibly other symptoms such as offensive odor or itching. *Trichomonas vaginalis*, *Candida albicans* with other species of candida are well recognized causes of vaginitis. Another type of vaginitis referred to as bacterial vaginosis is believed to be caused by *Gardnerella vaginalis*. However, a purulent discharge from the endocervix can be observed in some cases of cervicitis, the endocervix is the site from which *Neisseria gonorrhoea* is most frequently isolated in women with gonococcal infections.

AIM OF THE STUDY:

This study was concerned with the isolation of common microorganisms which may present in female abnormal vaginal discharge.

METHODS:

The study was conducted in the period from November 1992 to August 1993 on 480 female patients presented with vaginal discharge with or without pruritus vulvae attended the Gynecological and Antenatal Outpatient Clinics in Baghdad Medical City compared to 50 females complaining of gynecological problems other than infection attended the same clinic. Different laboratory methods were carried out during this work to isolate *Trichomonas vaginalis*, *Candida species*, *Gardnerella vaginalis* and *Neisseria gonorrhoeae*.

RESULTS:

Among 480 female patients subjected to this study, 92 were positive for *Trichomonas vaginalis* (19.16%), *Candida species* were found in 118 patients (24.58%), *Gardnerella vaginalis* was reported in 94 (19.58%), while *Neisseria gonorrhoea* was seen in 8 patients (1.66%). Infection with both *Trichomonas vaginalis* and *Gardnerella vaginalis* was reported in 22 patients (23.91%), simultaneous infection of *Trichomonas vaginalis* and *Candida species* was reported in 5 cases (5.43%), and in 7 patients combined infection of both *Trichomonas vaginalis* and *Neisseria gonorrhoea* was seen (7.6%).

CONCLUSION:

The highest rate of combined infection was seen in infected cases with both *Trichomonas vaginalis* and *Gardnerella vaginalis*, since both favor the growth in similar environment especially in (PH>4.5).

KEYWORDS: Vaginal discharge, vaginitis, bacterial vaginosis, sexually transmitted infections.

INTRODUCTION:

In the adult female the normal vaginal secretion consists of vaginal transudate containing desquamated vaginal epithelial cells, mucus secreted by the cervical glands, vulvar secretions from sebaceous and sweat glands, acid mucus secretions from Bartholin's glands and to a small extent secretions from endometrial glands. There is no gland in the vagina and the transudate pass through the stratified epithelium. The epithelium contains glycogen which is converted to lactic acid by Doderlein's bacilli which are present normally in the vagina.

As a result the vaginal fluid is acid, and this prevents the multiplication of most of pathogenic organisms. But when the infection supervenes, the clear or white secretion become purulent and colored and known as abnormal vaginal secretion or vaginal discharge which is a common gynecological symptoms⁽¹⁾. Different studies have been conducted to isolate the causative pathogens of this abnormal vaginal discharge^(2, 3, 4, 5).

PATIENTS AND METHODS:

This study was conducted in the period from November 1992 to August 1993 on 480 female patients complaining of vaginal discharge with or without itching. The patients were subjected to careful examination using various methods to detect *Trichomonas vaginalis* and other microorganisms.

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Full informative history was taken directly from the patients and information were arranged in an informative clearly detailed formula sheet. Each female was then examined gynecologically in the lithotomy position under a good source of light using sterile dry cusco's speculum without using any lubricant or antiseptic⁽⁶⁾.

Swab collection:

Through the sterile vaginal speculum two samples of the vaginal discharge were taken from the posterior fornix of the vagina by mean of sterile cotton swabs, one was immersed immediately into a sterile test tube containing 1 ml of sterile normal saline covered with sterile cotton plugs⁽⁷⁾, this tube was kept worm as far as possible till the time of examination. Swabs with transport media were used when available. The second swab was put in a sterile empty test tube which was covered with cotton plug as well. A third swab was taken from the endocervix to be examined for *Neisseria gonorrhoeae*. The sample in the sterile test tube containing normal saline or that taken by the transport swab were examined for the presence of *Trichomonas vaginalis* by:

1. wet mount examination.
2. Culture in artificial media / ready made Difco-Bacto Kupferberg Trichomonas medium.

A smear was made from the second vaginal swab and stained with the following stained smears:

- a. Gram' stain.
- b. Leischman's stain.
- c. Giemsa' stain.
- d. Papanicolaou's stained smears.

The sample for this stain was taken by Ayre' wooden spatula.

Vaginal discharge obtained by the second swab was streaked on the following media:

1. Blood agar medium.
2. Sabouraud dextrose agar medium.

The third swab which was taken from the endocervix was inoculated onto the chocolate agar plate, further identification for the colonies isolated from this media was done by subjecting These colonies to oxidase test which is positive in *Neisseria gonorrhoeae*⁽⁸⁾.

A gram stain was done from the colonies in the three culture media to look for the short gram variable rods (*Gardnerella vaginalis*), the budding yeasts of *Candida* species, or the gram negative diplococci (*Neisseria gonorrhoeae*).

Another test was performed (odor test), this was done by adding two drops of the mixture of discharge and saline on a slide to 1-2 drops of 10% KOH, a fishy amine odor was produced in case of *Gardenerella vaginalis* infection and in many cases of trichomoniasis, due to amine production⁽⁹⁾.

Wet preparation was helpful in demonstrating the clue cells which are vaginal epithelial cells to which such a large number of short bacilli attached, that the entire cell border is obscured and appeared serrated, these are usually seen in cases of *Gardnerella vaginalis* infection⁽¹⁰⁾.

RESULTS:

Among 480 female patients subjected to this study 92 were positive for *Trichomonas vaginalis* with infection rate of 19.16%, this was compared to the control group (50) females who were complaining of gynecological problems other than infection of which 4 were positive for vaginal trichomoniasis with an infection rate of 8%.

Different age groups were subjected to this study ranging from 14-70 years. The youngest and oldest patients showing infection were 17 and 50 respectively with the highest infection rate among females in the ages of greatest sexual activity as shown in table (1).

Regarding the other microorganisms isolated from females complaining of vaginal discharge, *Candida* species were seen in 118 of these 480 patients with an infection rate of 24.58%, *Gardnerella vaginalis* was reported in 94 of them with an infection rate of 19.58%, *Neisseria gonorrhoea* was found in 8 patients with an infection rate of 1.66% as shown in table (2). Out of 92 patients infected with *Trichomonas vaginalis*, 22 were infected at the same time with *Gardnerella vaginalis* (23.91%), simultaneous infection of *Trichomonas vaginalis* and *Candida* species was reported in 5 cases (5.43%), in 7 patients infection with both *Trichomonas vaginalis* and *Neisseria gonorrhoea* was seen (7.6%) as shown in table (3)

Table 1 : Frequency distribution of cases with vaginal trichomoniasis in different age groups.

Age Groups	Patients			Controls		
	Total number examined	Number of positive cases	Percentage %	Total number examined	Number of positive cases	Percentage %
14-19	20	4	20	4	0	0
20-29	192	40	20.83	16	0	0
30-39	182	38	20.87	16	2	12.5
40-49	62	8	12.9	4	2	50
50-59	18	2	11.11	8	0	0
60-70	6	0	0	2	0	0
	480	92		50	4	

Table (2): Frequency distribution of cases infected with *Candida* species, *Gardnerella vaginalis* and *Neisseria gonorrhoea* in different age groups in patients and controls.

Age in years	Patients						Control					
	Candida species		Gardnerella vaginalis		Neisseria gonorrhoea		Candida species		Gardnerella vaginalis		Neisseria gonorrhoea	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
14-19	6	30	0		0		0		0		0	
20-29	26	13.54	46	23.9	0		1	6.25	3	18.75	0	
30-39	60	32.96	28	15.38	6	3.29	2	12.5	2	12.5	0	
40-49	18	29.03	14	22.58	0		0		0		0	
50-59	6	33.33	0		2	11.11	0		1	12.5	0	
60-70	2	33.3	6	100	0		0		0		0	
Total	118		94	9.58	8	1.66	3	6	6	12	0	

Table (3): Association of *Trichomonas vaginalis* with other pathogens in 92 females infected with *Trichomonas vaginalis*.

Pathogens	Total positive cases		Simultaneous infection with <i>Trichomonas vaginalis</i>	
	No.	%	No.	%
Candida species	118	24.58	5	5.43
Gardnerella vaginalis	94	19.58	22	23.9
Neisseria gonorrhoea	8	1.66	2	7.6

DISCUSSION:

In 480 female patients subjected to this study, 92 were found to be infected with *Trichomonas vaginalis* giving an infection rate of (19.16%), similar results were obtained by other workers^(11,12). However lower infection rate were reported by others^(13,14,15). Concerning different age groups examined in this study it has been noted that *Trichomonas vaginalis* infection occur at ages of greatest sexual activities, this may agree with many workers (6,11,12). Other microorganisms were isolated from these 480 female patients as well, in which 118 females had infection with *Candida* species (24.58%), 94 were infected with *Gardnerella vaginalis* (19.58%), and 8 patients were positive for *Neisseria gonorrhoea* (1.66%). Simultaneous infection of *Trichomonas vaginalis* with other microorganisms were reported in this study. Among 92 patients infected with *Trichomonas vaginalis*, 5 were infected at the same time with *Candida* species giving an infection rate of (5.43%), 22 females showed positive results for both *Trichomonas vaginalis* and *Gardnerella vaginalis* (23.91%), and combined infection of *Trichomonas vaginalis* and *Neisseria gonorrhoea* were reported in 7 cases (7.6%).

The frequency of candidal infection is said to be lower in the presence of *Trichomonas vaginalis* than otherwise, this is due to the difference in the local environment requirement mainly the vaginal PH, since *candida* unlike *Trichomonas vaginalis* favor the growth in more acidic medium of PH<4.5^(16,17). It has been mentioned by many workers that *Trichomonas vaginalis* and *Neisseria gonorrhoea* are significantly associated with each other, *Trichomonas vaginalis* may facilitate the transmission or persistence of *Neisseria gonorrhoea* or vice versa, or the occurrence of the two organisms may be secondary to some other factors that influence the epidemiology of both pathogens^(7,18). The low number of *Neisseria gonorrhoea* reported in this study might be due to the lack of facilities need for its isolation and the limited number of transport swabs were available.

It may be useful to examine the patient for more than one time before excluding gonorrhoea, three negative sets of stained smears and culture are needed before negative results is recorded⁽¹⁸⁾.

Several workers studied the association of *Trichomonas vaginalis* with other pathogens^(3,10,19), many of them agreed that trichomoniasis may precipitate other type of infection which may be due to sexual risk behavior^(4,19,20,21). Using PCR amplification for detection of *Trichomonas vaginalis* and other microorganisms may improve the accuracy and suitability of the use of a single

intravaginal swab which is acceptable for the simultaneous diagnosis of multiple sexually transmitted infections and has potential for use as a self administered diagnostic tool with wide spread applicability among women^(21,22,23,24).

CONCLUSION:

Trichomonas vaginalis was reported in (19.16%), indicating that there is a considerable number of females in the society harboring the parasite, acting as the main reservoir and transmitter to other people suggesting that there is a real problem which should not be neglected and must receive attention from health authorities.

The highest rate of combined infection was seen in cases infected with both *Trichomonas vaginalis* and *Gardnerella vaginalis* since both favor the growth in similar environment specially PH>4.5(9). *Trichomonas vaginalis* might be responsible for the change in normal vaginal flora and may therefore precipitate for bacterial vaginosis⁽¹⁹⁾.

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