ISSN (Print): 2663-9491 ISSN (Online): 2789-6897

Original Article

Vaginal Discharge Caused by Trichomonas Vaginalis and Candida Albicans- A Prospective Study

DOI: dx.doi.org

Syeda Humaira Begum[1], Salma Akhter[2], Mohammad Shaha Alam[3], Shamim Ara Begum[4], Ayesha Begum[5], Abdur Rahman[6] , A. K. M. Harun-Ar-Rashid[7], Ismat Sultana[8]

Received: 06 APR 2022
Accepted: 19 APR 2022
Published: 20 APR 2022

Published by:
Sheikh Sayera Khatun Medical College Gopalganj, Bangladesh

This article is licensed under a Creative Commons Attribution 4.0 International License.

ABSTRACT

Objective*: In this study our main goal was to evaluate the cases of vaginal discharge due to Trichomonasvaginalis and Candidaalbicans.* ***Method:*** *This prospective analytical study was carried out in OPD of Tribhuvan University Teaching Hospital (446 bedded tertiary level hospital) from 22.05.03 to l0.10.03 between 9am to 12 noon and from 2pm to 4pm.*

Result: *During the study, among the cases with copious vaginal discharge, 36(18.3%) patients had Trichomonasvaginalis infection and 36(18.3%) patients had Candida albicans infection i.e. total of 72 cases. Rest of 125(63.4%) cases with copious discharge did not have any infection with either T.vaginalis or C.albicans. T. vaginalis was present in 36(81.8%) cases who presented with white vaginal discharge , and Yellow/yellowish green vaginal discharge was present in 8(18.2%) cases of T. vaginalis.C.albicans was present in 40(88.9%) cases who presented with white vaginal discharge. andYellow/yellowish green vaginal discharge was present in 5(11.1%) cases of C. albicans. A total of 33(11.0%) cases had a history of taking OCP and 267(89%) cases did not have a history of taking OCP.* ***Conclusion:*** *It is concluded that, just a mere complaint of vaginal discharge does not really mean an infection with Trichomonasvaginalis and/or Candida albicans; moreover mixed infection with both organisms being only 2 in this study, symptomatic approach in the management of vaginal discharge does not seem to be justifiable. OCP and sexual intercourse was also found to increase the risk of Candida albicans and Trichomonasvaginalis respectively.*

1. *Consultant, Gynae & Obst., Fouad Al Khatib Hospital, Cox's Bazar, Bangladesh*
2. *Assistant professor, Department of Obstetrics and Gynaecology. Chattogram Maa O Shishu Medical College. Chittagong, Bangladesh*
3. *Assistant Professor of Surgery, Cox's Bazar Medical College, Cox's Bazar, Bangladesh*
4. *Assistant Professor of Gynae & Obst. , Cox's Bazar Medical College, Cox's Bazar, Bangladesh*
5. *Assistant Professor of Pediatrics, Chittagong Medical College, Chattogram, Bangladesh*
6. *Assistant Professor of Orthopedic Surgery, Chittagong Medical College, Chattogram, Bangladesh*
7. *Assistant Prof. of Orthopedic Surgery, Cox's Bazar Medical College, Cox's Bazar, Bangladesh*
8. *Medical Officer, Chittagong Medical College, Chattogram, Bangladesh.*

Keywords: *Vaginal Discharge, Trichomonas vaginalis, Candida albicans.*

(The Insight 2021; 4(2): 109-117)

INTRODUCTION

Vaginal discharge is a common symptom of genital tract infection in women and it is the second most common gynecological problem after menstrual disorder. One in ten women present with vaginal discharge in the course of a year[1]. ; Trichomonas vaginalis (T. vaginalis) [2] and Candida albicans (C. albicans) [3].

T.vaginalis is a flagellate protozoan, facultative anaerobic, extracellular human parasite transmitted by sexual intercourse [4-5]. Classic symptoms of trichomoniasis include greenish yellow malodorous vaginal discharge, accompanied (or not) by local irritation [2]. The vaginal pH of women with trichomoniasis is often above [4.5]. However, more than half of those infected are asymptomatic. Risk factors for infection by T.vaginalis are, in general, the same as for other sexually transmitted infections (STI): higher numbers of lifetime sexual partners and irregular use of condoms. [6-7].

In a study conducted in a primary care setting, the authors reported the prevalenceof T.vaginalis of 2.6% which is quite different of that estimated by the study of Brazilian Ministry of Health (14%), which was carried out in six Brazilian capitals. [8].

Fungi of the genus Candida are commensals, usually found colonizing on human skin and in the gastrointestinal and genitourinary tracts.[9]. Among the causes of vulvovaginitis, Candida spp. infection is the second most prevalent, after bacterial vaginosis. It is estimated that one in five women harbour Candida species and other varieties of fungi in the vagina and three out of four women will present at least one episode of vulvovaginal candidiasis during their lifetimes.[10].

OBJECTIVE

To study the cases of vaginal discharge in women attending Gynae OPD and to find out the cases of Trichomonas vaginalis and Candida albicans among them.

METHODS AND MATERIALS

Types of study: This was a prospective analytical study.

Inclusion criteria:

- Women or reproductive age group.
- Perimenopausal women.
- Postmenopausal women.

Exclusion criteria:

- Patients with PN bleeding.
- Prociclentia

Sampling technique and procedural steps:

All women who were attending Gynae OPD were interviewed whether they had complaints of vaginal discharge or not. Those who had the complaint were selected for the study. They were explained about the purpose of the study and type of procedure. Written consent was taken from those women who were selected for the study. Up to 300 (three hundred) women who had history of vaginal discharge were included for the study. Basic information and specific history such as history of pruritus, frequency of sexual intercourse, use of OCP and history of recent use of antibiotics in last three months were recorded before the

women were subjected to clinical examination.

Data collection

Structurally prepared questionnaire was used. History pertaining to the symptoms of vaginal discharge was noted. A thorough general physical examination and systemic examination was entered into the questionnaire. All the data was entered in a master chart.

Data analysis

Data was analyzed in SPSS programme. Analysis was done in terms of age of patient, parity, amount, color, odor, consistency of vaginal discharge. Data was also analyzed in terms of use of antibiotics, recent use of OCP (Oral contraceptive pill), history of sexual intercourse and microscopic findings. Interim analysis was done after finishing each l00 cases and final analysis was done after taking 300 cases. Results were evaluated and were presented in tables and figures in accordance to the purpose of the study.

RESULT

The Distribution of the patients where T.vaginalis was most commonly seen in the 20-24 years age group and also in the 25-29 years age group comprising 24 (54.6%) cases (12 in each age group). Whereas, C.albicans was commonly seen in the 25-29 years age group comprising 17 (37.8%) cases. Surprisingly, there was no infection with Trichomonas vaginnlis or Candida albicans was seen in 20-19 year's age group comprising 94 (44.6%) cases. In the age group above 44 years 27(9(%) cases did not show any infection with Trichomonas vaginalis or Candida albicans.

Table-1: Distribution of the vaginal discharge according to amount (**n = 300)**

	T.vaginal	**C.albjcans**	**No T.vaginalis or C.albicans**
Copious discharge 197(65.7%)	36(18.3%)	36(18.3%)	125(63.4%)
Scummy discharge! 103(34.3%)	8(7.81%)	9(8.7%)	86(83.5%)

Table-1 shows Distribution of the vaginal discharge according to amount where among the cases with copious vaginal discharge 36(18.3%) had Trichomonasvaginalis infection and 36(18.3%) had Candida albicans infection i.e. total of 72 cases. Rest of 125(63.4%) cases with copious discharge did not have any infection with either T.vaginalis or C.albicans.

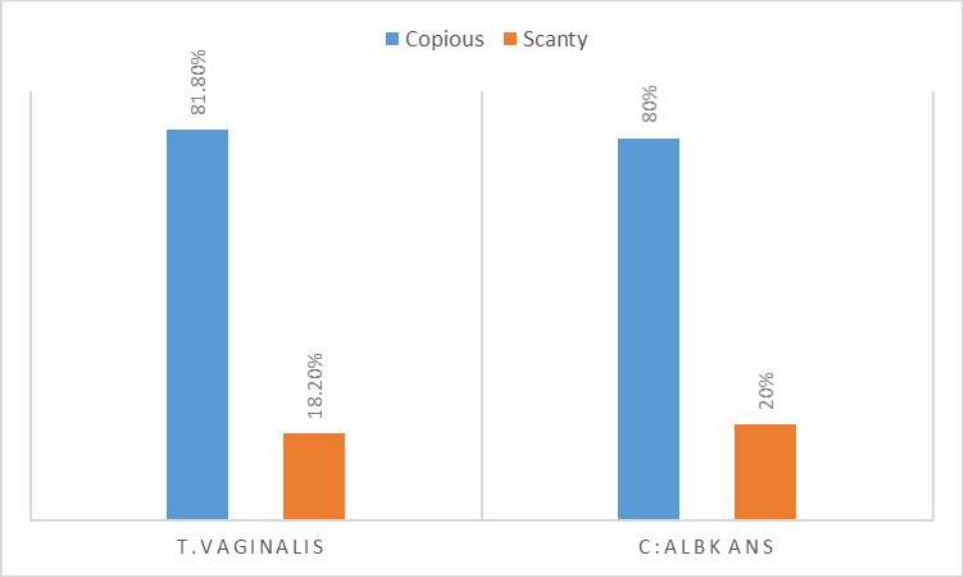

Figure-1: Vaginal discharge amount in T.vaginalis and C.albicans infection.

In **figure-1** shows vaginal discharge amount in T. vaginalis and C.albicans infection where copious amount of vaginal discharge was present in 36(81.8%) cases of T.vaginalis and 36(80%) cases of C.albicans. Scanty amount of vaginal discharge was present m 8(18.2%) cases of T. vaginalis and 9(20%) cases of C. albicans.

Table-2: Vaginal discharge: Color in T. vaginalis and C. albicans infection

Variables	White color	Yellow/yellowish green	x^7 ptest.
T.vaginalis (n=44)	36(81.8%)	8(18.2%)	0.345
C.albicans (n= 45)	40(88.9%)	5(11.1%)	-

In **table-2** shows Vaginal discharge color in T. vaginalis and C. albicans infection where T. vaginalis was present in 36(81.8%) cases who presented with white vaginal discharge and C.albicans was present in 40(88.9%) cases who presented with white vaginal discharge. Yellow/yellowish green vaginal discharge was present in 8(18.2%) cases of T. vaginalis and in 5(11.1%) cases of C. albicans.

Table-3: Vaginal discharge: Consistency in T.vaginalis and C.albicans infection

Variables	Watery	Thick	Frothy	Creamy
T.vaginalis (n= 44)	26(59.1 %)	l1(25.0%)	4(9.1%)	3(6.8%)
C.albicans (n= 45)	1(2.2%)	4(44.0%)	Nil	1 (2.2%)
P value	<0.0001	<0.0001	0.06	0.361

In **table-3** shows vaginal discharge consistency in T.vaginalis and C.albicans infection where among the cases of T.vaginalis infection maximum number of cases i.e. 26(59.1%) cases presented with watery vaginal discharge, 11(25.0%) cases with thick vaginal discharge, 4(9.1%) cases with frothy vaginal discharge and 3(6.8%) cases presented with creamy vaginal

discharge. In case of C.albicans infection maximum number of cases i.e. 43(95.6%) cases presented with thick vaginal discharge, 1(2.2%) case presented with watery vaginal discharge and 1(2.2%) case presented with creamy vaginal discharge. There was no consistency of C.albicrmsinfection who presented with frothy vaginal discharge.

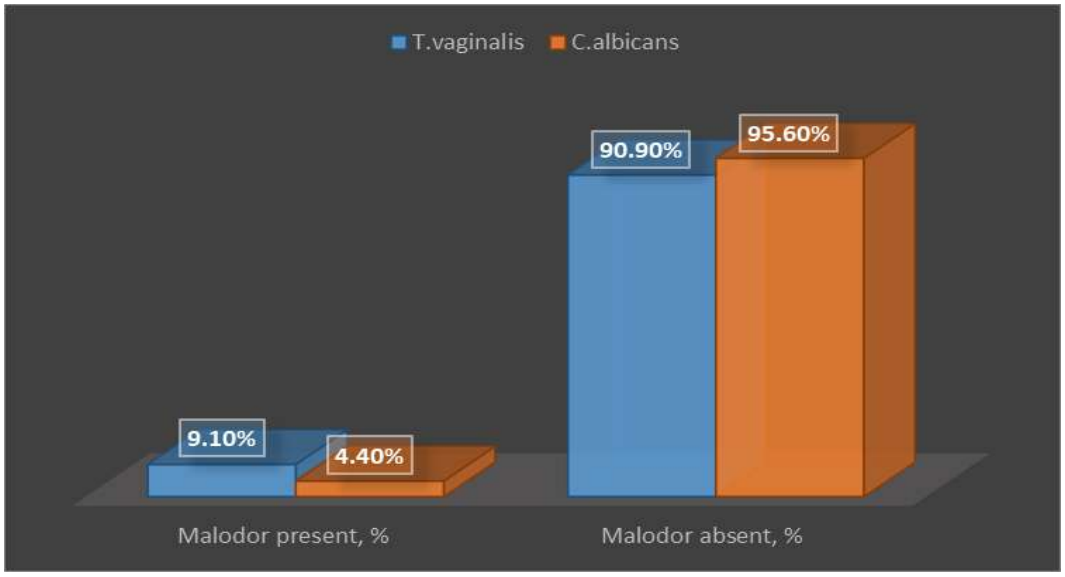

Figure-2: Vaginal discharge Malodor in T.vaginalis and C.albicans infection.

In **figure-2** shows vaginal discharge Malodor in T.vaginalis and C.albicans infection where among the cases of T.vaginalis infection malodor was present in 4(9.1%) cases and 40(9.9%) cases did not have malodorous discharge. Among the cases of C.albicans infection 2(4.4%) cases malodorous vaginal discharge and 43(95.6%) cases did not have malodorous vaginal discharge.

Table-4: Vaginal discharge: Pruritus in T. vaginalis and C.albicans infection

variables	Pruritus present	Pruritus absent	X^7_ptest
T.vaginalis	21(47.7%)	23(52.3%)	0.246
C.albicans	**27(60.0%)**	18(40.0%)	

In **table-4** shows vaginal discharge: Pruritus in T. vaginalis and C.albicans infection where T.vaginalis infection was found in 21(47.7%) cases who had a history of pruritus and 23(52.3%) cases of T.vaginalis did not have a history of pruritus. In case of C.albicans infection history of pruritus was present in 27(60%) cases and 18(40%) cases did not have a history of pruritus.

Table-5: Correlation between frequency of sexual intercourse and vaginal discharge

n = 300	T.vaginalis	C.albicans	No T.vaginalis or C.albicans
Freq. of sexual intercourse Once/month 17(5.6%)	5(29.4)%	l (5.9%)	11(64.7%)
Freq. of intercourse once/wk 96(32.0%)	8(8.4%)	20(20.8%)	68(70.8%)

Freq. of intercourse 2-3 times/wk 95(31.7%)	19(20 .0%)	12(12.6%)	64(67.4%)

Variables	Once / month	Once / wk	2-3 times / wk	>3 times	Others
T.vaginalis	5(11.4%)	8(18.2%)	19(43.2%)	7(15.9%)	5(11.4%)
C.albicans	1(2.2%)	20(44.4%)	12(26.7%)	3(4.4%)	10(22.2%)
P value	0.11	0.005	0.102	0.09	0.17

Freq. of intercourse >3 times/wk 20 (6.7%)	7(35%)	2(10.0%)	11(55.0%)
Freq. of intercourse other than above frequencies 72(24.0%)	5(6.9%)	10(13.9%)	57(79.2%)

In **table-5** shows correlation between frequency of sexual intercourseand vaginal discharge where among 300 study population history of sexual intercourse once in a month was present in total 17 (5.7%) cases, once per week was present in 96(32%) cases, 2-3 times per week was present in 95(31.7%) cases, more than three times per week was present in 20(6.6%) cases and history of sexual intercourse other than those frequencies that had been described above was present in 72(24%) cases.

Table-6: Correlation between frequency of sexual intercourse in T. vaginalis and C. albicans infection.

In **table-6** shows correlation between frequency of sexual intercourse in T.vaginalis and C.albicans infection where T.vaginalis was more commonly seen among the cases who had frequency of sexual intercourse 2-3 times per week 19(43.2%) cases followed by once per week 8(18.2%) cases, more than three times per week in 7(15.9%) cases, once per month in 5(11.4%) cases and frequencies other than these were present in 5(11.4%) cases. In case of C.albicans, infection was seen more among those who had frequency of sexual intercourse once per week 20(44.4%) cases followed by 2-3 times per week 12(26.7%) cases, other frequencies in l 0(22.2%) cases, more than three times per week in 2(4.4%) cases and in 1(2.2%) case who had frequency of sexual intercourse once per month.

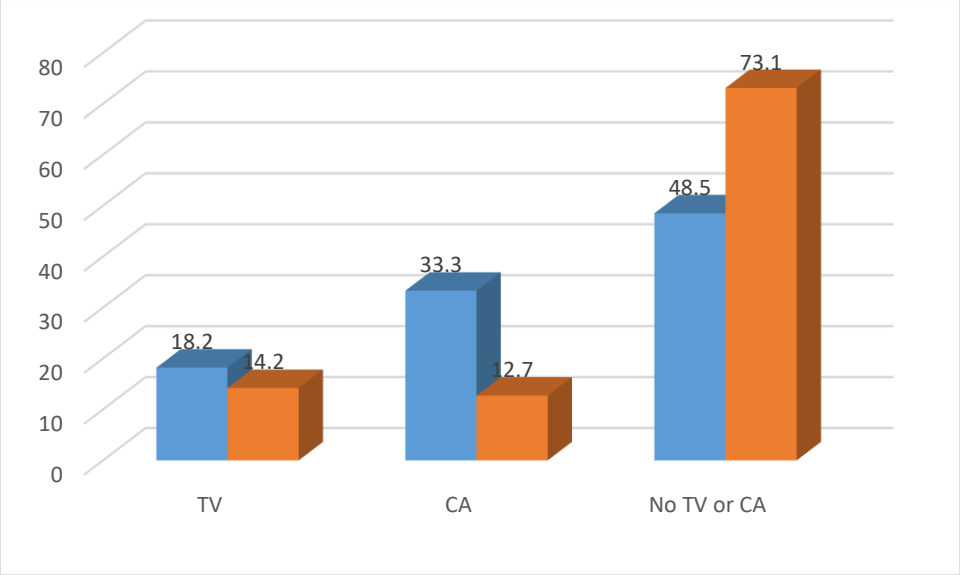

Figure-3: Vaginal discharge and OCP usage of the patients

In figure-3 shows vaginal discharge and OCP usage of the patients where a total of 33(11.0%) cases had a history of taking OCP and 267(89%) cases did not have a history of taking OCP.

Variables	OCPusers	OCPnonusers	X^2 / P value
T. vaginalis	6(13.6%)	38(86.4%)	0.195
C.albicans	11(24.4%)	34(75.6%)	

Table-8: Correlation between OCP use and T. vaginalis and C. albicans infection.

DISCUSSION

Out of 300 cases studied it was found that copious amount of vaginal discharge was present in 63.4% cases without any infection of T. vaginalis and C. albicans. This could be probably because of other infections like G. vaginalis which is responsible for copious discharge was not investigated in this study and also cervical erosion was also found in 40.3% cases among the cases of copious vaginal discharge. As expected, 83.5% cases did not have any infection of T. vaginalis and C. albicans.

Regarding the color of vaginal discharge, the present study showed that white discharge was associated with neither T.vaginalis nor C.albicans infection in 72.5% cases. Whereas more than fifty percent cases with yellow or yellowish green discharge had infection diagnosed as T. vaginalis or C. albicans. Even among those with yellow or yellowish green vaginal discharge T.vaginalis infection was seen more than C.albicans infection. This confirms the findings of studies done by two studies who found increase incidence of T.vaginalis with yellow or yellowish green vaginal discharge [10-11].

In this study infection with T.vaginalis was more with watery vaginal discharge and infection with C.albicans was more with thick vaginal discharge. One twenty two cases presented with watery vaginal discharge but did not show any infection of T. vaginalis and C.albicans. Reasons may be due to other forms of vaginal infection like, Bacterial vaginosis. Because infection with this organism also cause watery vaginal discharge. This is keeping with other studies [12-13].

Most of the cases of C.albicans presented with a history of pruritus i.e. 60% cases when compared to T.vaginalis. This finding is supported by the one study who have also mentioned that pruritus was the chief complaint among C. albicans infection [12].

In this study 42.2% cases had history of pruritus in the absence of any infection of T. vaginalis and C. albicans. This can be explained by the fact that 25% of cases in this study were from low socioeconomic status which was responsible for the lack of hygiene and resulted in vaginal discharge. Also the cause of pruritus in the absence of infection could be Gardnerella vaginitis, gonococcal infection, eczema and allergy to nylon underwear which was not analyzed in this study.

Malodorous discharge was less in this study. A total of six cases of T.vaginalis and C.albicans had foul smelling vaginal discharge. In eleven cases that did not have either T.vaginalis infection or C.albicans infection but had foul smelling discharge may be due to Bacterial vaginosis infection. These findings are supported by the studies [11,14].

Increase frequency of sexual intercourse has been described as an important risk factor for T.vaginalis in this study as 59.1% of cases with T.vaginalis had sexual frequency above two times per week. This is confirmed by the studies of ThapaS and Crosby 'R et al who also found increased rate of T.vaginalis infection with increase frequency of sexual intercourse [15-16].

Although peak incidence of C.albicans infection was among those with sexual intercourse of only once per week i.e. 44.4% it was also seen that about 31.1% cases of C.albicans were also present in those with frequency of sexual intercourse more than two times per week. This goes to show that sexual intercourse could have a role in the transmission of C.albicans although frequency of coitus as a risk factor per se remains controversial.

CONCLUSION

It is concluded that just a mere complaint of vaginal discharge does not really mean an infection with Trichomonasvaginalis and/or Candida albicans; moreover mixed infection with both organisms being only 2 in this study, syndromic approach in the management of vaginal discharge does not seem to be justifiable. OCP (Oral Contraceptive Pill) and sexual intercourse was also found to increase the risk of Candida albicans and Trichomonasvaginalis respectively.

REFERENCES

1. *Frobenius W, Bogdan C. Diagnostic value of vaginal discharge, wet mount and vaginal pH - an update on the basics of gynecologic infectiology. GeburtshilfeFrauenheilkd. 2015;75(4):355–66.*
2. *Workowski KA, Bolan GA. Sexually transmitted diseases treatment guidelines, 2015. MMWR. Recommendations and reports: Morbidity and mortality weekly report. Recommendations and reports / Centers for Disease Control. Centers for Disease Control and Prevention. 2015:1–137.*
3. *Angebault C, Djossou F, Abélanet S, Permal E, Ben Soltana M, Diancourt L, et al. Candida albicans is not always the preferential yeast colonizing humans: a study in Wayampi Amerindians. J Infect Dis. 2013;208(10):1705–16.*
4. *Poole DN, McClelland RS. Global epidemiology of Trichomonasvaginalis. Sex Transm Infect. 2013;89:418–22.*
5. *Kissinger P. Trichomonasvaginalis: a review of epidemiologic, clinical and treatment issues. BMC Infect Dis. 2015;15(1):307.*
6. *Manshoori A, Mirzaei S, Valadkhani Z, KazemiArababadi M, Rezaeian M, Zainodini N, et al. A diagnostic and symptomatological study on trichomoniasis in symptomatic pregnant*

women in Rafsanjan, South Central Iran in 2012-13. Iran J Parasitol. 2015;10(3):490–97.

7. *Sutton M, Sternberg M, Koumans EH, McQuillan G, Berman S, Markowitz L. The prevalence of Trichomonasvaginalis infection among reproductive-age women in the United States, 2001-2004. Clin Infect Dis. 2007;45(10):1319–26.*
8. *Bachmann LH, Hobbs MM, Sena AC, Sobel JD, Schwebke JR, Krieger JN, et al. Trichomonasvaginalis genital infections: progress and challenges. Clin Infect Dis. 2011;53(suppl 3):S160–72.*
9. *Crosby R a, Charnigo R a, Weathers C, Caliendo AM, Shrier L a. Condom effectiveness against non-viral sexually transmitted infections: a prospective study using electronic daily diaries. Sex Transm Infect. 2012;88(7):484–89.*
10. *Johara M. Patients with vaginal discharge: A survey in a University, Primary Care Clinic in Riyadh City. SMJ Sept 1999, 203-204*
11. *Gerbase AC, Rowley JT, Heymann DELL, et al. Global prevalence and incidence estimates of selected curable STD's. Sex Transm Infect 1998; 74 (supp1-1): 12-16.*
12. *Eckert LO, Hawes SE, Stevens CE, Kiustsky LA, EschenbachDA,Holmes KK. Vulvovaginal candidiasis: clinical manifestations, risk factors and management algorithm. Obstet and Gynaecol 1998; 92 (5): 757-765.*
1. *13. Denning DW. Fortnightly review: Management of genital candidiasis.13MJ 1995; 310:12,11-124,1.*
13. *Anderson MR, Kathleen K, Andreas C. Evaluation of vaginal complaints. JAMA. 2004; 291(II):1368-79.*
2. *15. Crosby R, Diclemente RJ, Wingood GM, et al. Predictors of infection with Trichomonasvaginalis: a prospective study of low income African-American adolescent females. Sex Transm Infect 2002; 78:360-364.*
3. *16. Thapa S. Commercial sex workers in Kathmandu valley, their health profile and health status, AIDS and S'I'DS prevention network, Dec1993; 30-31.*