# An Investigation for Some Vaginitis and Sexually Transmitted Disease Pathogens Among Prostitutes in Diyarbakır

## *DİYARBAKIR'DAKİ HAYAT KADINLARINDA BAZI VAJİNİT VE CİNSEL TEMAS İLE BULAŞAN HASTALIK ETKENLERİ ÜZERİNE BİR ARAŞTIRMA*

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**Summary**

*Objective: In this study, we examined the prevalence of some potential pathogens causing vaginitis and sexually transmilted disease among prostitutes.*

*Institution: Diele University, Faculty of Medicine, Departments of Microbiology, Gynecology & Obstetrics; Diele University, Faculty of Education. Department of Biology.*

*Materials **and** Methods: Seventy two ¡iros/ilutes in Diyarbaktr city brothel were examined for Garduercl la vaginalis, Candida subspecies. Group-B-streptococci and Neisseria gonorrhoeae during routine controls. As a control group high, vaginal swabs obtained from 30 healthy monogamie women were prepared. Three swabs were taken from each subject after insertion of a speculum through the posterior fornix. Two swabs were used immediately to inocúlale appropriate media. These included a blood agar, a chocolate agar. EMB (Eozinmethylen blue), Stiboiiraud-dextrose agar, and human blood hilayer medium with Tween NO (ÜBT). The inoculated plates were transported to the laboratory very quickly, while the third was used for direct microscopy of wet preparation, Grain stain and Giemsa slain. Statistical analysis was carried out by using student's t-test.*

*Results: Potential pathogens were Isolated from 29 (40.2%) of 72 specimens from among women working in the brothel. Gardnerella vaginalis was the most frequently recovered organism which was found in 19.4%) of the cases followed by Candida subspecies (13.9%), Group-B-Streptococci*

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**Özet**

***Amaç:** Bu çalışmada hayat kadınlarında vajiüt ve cinsel temasla bulaşan hastalık etkeni olabilecek bazı potansiyel patojenlerin prevalansını belirlemeye çalıştık.*

***Çalışmanın Yapıldığı Yer:** Dicle Üniversitesi Tıp b'akültesi Mikrobiyoloji, Kadın Hastalıkları ve Doğum Anabilim Dalları, Eğitim Fakültesi Biyoloji Anabilim Dalı.*

***Materyal ve Metod:** Diyarbakır ili genelevini/eki 72 hayat kadını rutin kontroller sırasında Gardnerella vagiuudis, Ccuudida türleri, B Grubu streptoklar ve Neisseria gonorrhoea yönünden incelendi. Kontrol grubu olarak, tek eşli (dan 30 sağlıklı kadından alınan vagiual örnekler hazırlandı. Spekiiluuuun. poslerior fornikse doğru sokulmasından sonra her hastadan 3 siiriiutii örneği alındı. Sürüntülerdeu ikisi uygun besiyerlerine ekim işlemlerinde kullanıldı. Bu besiverleri kanlı ağar, çukulato tıgaı; EMB (Eozin uuelhvleu hlue) Suhouraiuid dekstrose agar ve insan kanlı HBT ağardı. Ekim yapılan /ı/aklar hızlı bir şekilde laboratuvara nakledildi. Üçüncü sürüntü örneği ise direk mikroskobik incelemede gram ve giemsa boyama yöntemleri için kullanıldı. İstatistiksel değerlendirmeler slıdeul's I testi ile yapıldı.*

***Bulgular:** Genelevde çalışan kadınlardan alınan 72 örnekten 29'ımda (%>40.2) potansiyel patojen mikroorganizma saplandı. En sık olarak Gardnerella vagiuudis ("419.4i ve sırasıyla Candida türleri ("Ad 3.9) ve Group-B-Streptoeoeei ("<d3.9) varlığı belirlendi. Kontrol grubunda Gardnerella vagiualis ve 13 Grubu streptoklar izole edilmezken, 1 olguda Trichomonas vagiualis ve 2 ogıulcı Candida türleri bulundu (p<0.01).*

***(13.9%)*** *and Neisseria gonorrhoeae (%,1.4). No Gardnerella vaginalis or Group-B-Streptococci were isolated from the control group; however, Trichomonas vaginalis was found in one and Candida subspecies in two control subjects (p<l).l)l).*

***Conclusion:*** *While Gardneralla vaginalis, Candida subspecies and Group-B-Streptococci were the most common isolated organisms. Neisseria gonorrhoeae was found rarely among prostitutes working at Diyarbakır brothel.*

**Key Words:** Prostitute, vaginitis. Sexually transmitted disease

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***Sonuç:*** *Diyarbakır genelevinde çalışan hayat kadınlarında en sık rastlanan potansiyel patojen mikroorganizmalar Gardneralla vaginalis, Candida türleri B Grubu slreptoklar olarak belirlenirken. Neisseria gouorrhoeae'ye nadiren rastlandı.*

**Anahtar Kelimeler:** Hayat kadını, Vajinit,
Cinsel temasla bulaşan hastalık

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The vaginal flora of women changes with age, pH of mucosa and plasma oestrogen concentration. In prepubertal period, vaginal pH is alkaline; after puberty, it becomes acid and begins to change again toward alkaline pH at the beginning of the menopause (1).

Like vaginal pH, normal vaginal micro flora also play an important role in protection against infection by impeding the settlement of pathogenic microorganisms. In sexually active women, particularly among prostitutes, pathogens such as Chlamydia trachomatis, Gardnerella vaginalis (G.vaginalis), Urcaplasma urealyticum, Mycoplasma hominis, Group-B-strcptococci (GBS), Neisseria gonorrhoeae (N. gonorrhoeae), Trichomonas vaginalis (T. vaginalis), and yeast may colonise the vagina and cause vaginitis. Many of these arc transmitted sexually (2,3).

In this study, we examined the prevalence of some of these potential pathogens among 72 prostitutes at Diyarbakır brothel. Facilities were available to isolate and positively identify G.vaginalis, Candida subspecies (spp), GBS and N. gonorrhoeae.

## Materials and Methods

High vaginal swabs were obtained from 72 symptomless prostitutes (mean age 27.5±4.8) and 30 monogamic women for control group (mean age 25.7±4.4), who had not received any antibiotics or any other form of therapy dusing one month prior to the study.

Organisms were isolated following incubation of the culture media,and their identity to species level was confirmed by using biochemical tests as described previously (5).

Human blood bilayer medium with Twcen 80 (HBT) medium was prepared by adding colistin, nalidixic acid, amphotericin B, Tween 80 and 5% human blood to the autoclavcd Columbia agar (Difco CM 331). HBT medium was composed of a basal layer of colistin, nalidixic acid, amphotericin B, Tween 80 and overlayer of the same composition plus 5% human blood was used to isolate Gardnerella vaginalis, and plates were incubated under 10% C02 atmosphere at 37°C for 24-48 hours (6).

Candida species were detected on Sabouraud-dextrose agar (Mast Lab, Ltd. Merseyside UK) and typed according to their colonial morphology, cultural behavior on Tween-80 Media (Merck-Schurgardt, 8011, Munchen), and their ability to ferment sugars and hydrolyze urea.

GBS were identified after isolation from blood agars by using strcptococcus-antiserum-group-B kit (Difco, 2741-50-9).

As a control, vaginal samples were obtained from 30 healthy monogamic nonpregnant women and were processed as above.

Statistical analysis was carried out by using student's t-test.

## Results

The results of direct microscopic examination of high vaginal swabs obtained from 72 women working in the brothel are shown in Table 1.

After the cultivation of vaginal smears obtained from 72 prostitutes, 20 (27.7%) had no sexually transmitted microorganisms. Twenty-nine (40.2) harbored some pathogens and 23 (31.9%) yielded no microorganisms. The distribution of

vaginitis pathogens seen in 29 cases arc shown in Tabic 2. In 23 subjects, single pathogenic organisms were found, and two pathogens were seen in six subjects.

Direct microscopic findings and microorganisms identified in vaginal specimens of 30 monogamic nonpregnant married women, as a control, arc shown in Tables 3 and 4, respectively.

Under direct microscopic investigation, we identified clue cells in two vaginal specimens and T.vaginalis in one vaginal specimen of monogamic women. No N.gonorrhoeae, G.vaginalis or Group-B-Streptococci were isolated from the control group.

## Discussion

It is normally anticipated to find a higher rate of pathogenic agents in the vagina of prostitute women. Several publications have shown that the greater the number of sexual partners is the higher this proportion is, and that G.vaginalis, T.vaginalis, and yeasts are the most frequently isolated pathogens (2,7).

Although G.vaginalis is olten constituent of the normal vaginal flora, there is a highly significant association between Bacterial Vaginosis (BV) and the presence of G.vaginalis. In some studies, recognition of clue cells, which is an excellent predictor of bacterial vaginosis, is likewise subject to variability, depending on the quality of the microscope, the adequacy of the specimen. In contrast, it is argued that the detection of G.vaginalis cither by Gram's stain or by culture alone can not be recommended as a method for the diagnosis of BV, because the organism is often constituent of the normal vaginal flora (8).

In this study, we isolated some of the potential pathogens in 40.2% of 72 vaginal specimens from prostitutes working in a brothel. G.vaginalis was the most frequently recovered organisms to be found in 19.4% of the cases followed by Candida spp and GBS (13.9%). Following direct microscopic investigation of vaginal samples from the same women, the ratio of clue cells and T.vaginalis were identified in 25% and 16.7% of the cases, respectively. T.vaginalis infection is usually sexually transmitted, but among those included in this study,

**Table 1.** The results of direct microscopic examination of vaginal swabs in samples obtained from 72 prostitutes.

| | n | % |
|---|---|---|
| Clue cell | 18 | 25.0 |
| T.vaginalis | 12 | 16.7 |
| Candida spp. | 5 | 6.6 |
| Gram-positive cocci | 8 | 11.1 |
| Gram-negative bacilli | -> | 2.8 |

**Table 2.** The results of cultured vagina l swabs in samples obtained from 29 prostitutes.

| | ll | % |
|---|---|---|
| G.vaginalis | 14 | 19.4 |
| Candida spp. | 10 | 13.9 |
| Group-B-streptoeocci | 10 | 13.9 |
| N.gonorrhoeae | 1 | 1.4 |

**Table 3.** The results of direct microscopic investigation of vaginal swabs obtained from monogamic women.

| | n | % |
|---|---|---|
| Clue cell | 2 | 6.7 |
| T.vaginalis | 1 | 3.3 |
| Blastospores | 4 | 13.3 |
| Gram-positive cocci | .1 | 10.0 |

only one case was found in the control group of monogamic women.

On the other hand, N.gonorrhoeae, GBS, or G.vaginalis were not recovered from vaginal specimens obtained from the control groups. On direct microscopy, however, clue cells and T.vaginalis were found in two and one of 30 control cases, respectively. Therefore, the frequency of G.vaginalis, T.vaginalis, GBS and Candida spp in the test and control group was significantly different ($p<0.001$).

In a study carried out in women who had multiple sexual partners, 63.4% G.vaginalis, 7.3% T. vaginalis and 4.9% Candida spp. were determined (9). In another study on 15.953 women in Taiwan, pap smear method was carried out for some sexually transmitted disases (10). The overall prevalence of Candida and trichomonal infection was 3.4%>

and 1.8%, respectively. In (ireccc, a total of 6226 samples from women who presented vaginal symptoms were examined (11). The isolation rates of other common pathogens such as Candida spp, G. vaginalis and T. vaginalis were 54.1%, 27.2% and 4.2% respectively. In contrast, the isolation rates of these microorganisms in the group of patients who had no infection were 38.3% and 33%, 0.5%, respectively.

In two comparative studies, G.vaginalis was isolated from 7% sexually abused girls and 1% of those in control group, while in another study, G.vaginalis was detected in 34% of sexually active girls and 17% of virgins, and the difference was statistically significant (12). In the same study, no statistically significant differences were found between the test and control groups with regard to T.vaginalis and N.gonorrhoeae.

Although some authors have suggested that GBS colonization is associated with the number of sexual partners, this relation is not verified by the others (13,14). Maniatis el al. (11) found 10.1% S.agalactica from specinens of women who presented vaginal symptoms, but 4.2%) in the patient group who had no infections. In our study, we isolated GBS in vaginal specimens of 13.8% of 72 prostitutes, while wc could not in those of control group (P<0.05).

The findings of this study, in which G.vaginalis, Group-B-Strcptococci and Candida spp were the most frequently isolated microorganisms in prostitute women compared to those in control group, do support the concept that these organisms are acquired as a result of sexual activity. Therefore, there is a great risk of transmission of potential sexually transmitted pathogens among prostitutes. Accordingly, routine health controls of women working in brothel arc necessary.

## REFERENCES


1. Hill BG. The microbiology of bacterial vaginosis. Am J Obstet Gynecol 1993; 169: 450-4.
2. Osborne NG, Grubin L, Pratson S. Vaginitis in sexually active women: Relationship to nine sexually transmitted organisms. Am J Obstct Gynecol 1982: 142; 962-7.
3. Krieger JN, Tarn MR, Stevens CE et al. Diagnosis of Trichomoniasis. JAMA 1988; 259: 1223-27.
4. Spiegel CA, Amsel R, Holmes KK. Diagnosis of bacterial vaginosis by direct gram stain of vaginal lluid. J Clin Microbiol 1983; 18: 170-7.
5. Koneman EW, Allen SD, Jando WM, Sehrcckenberger PC, Winn W.C. The role of the Microbiology Laboratory in the diagnosis of infectious diseases. Diagnostic Microbiology. Philadelphia: JB Lippincott Company, 1992: 6-38.
6. Torten PA, Amsel R, Hale J, Piot P, King KK. Selective differential human blood bilayer media for isolation of Gardnerella (Haemophilus) vaginalis. J Clin Microbiol 1982; 15: 141-7.
7. Gardner J.I. Comparison of the vaginal flora in sexually abused and nonabused girls. J Pediatrics 1992; 120:872-7.
8. Chen KCS, Amsel R, Holmes KK. Diagnosis of bacterial vaginosis by direct gram stain of vaginal lluid. J Clin Microbiol 1982; 145: 337-45.
9. Brito EB, Menezes RC, Martins SJ. Bastos MG, Souse A. Preliminary study on low-trait genital infection and cervical epithelial dysplasia in women from the Parakana tribe of south America. Row Assoc Med Bras 1996; 42: 11-5.
10. Wang PD, Lin RS. Epidemiologic differences between candidial and triehomonal infections as detected in cytologic smears in Taiwan. Public Health 1995; 109:443-50.
11. Maniatis AN, Palermos J, Kantzanou M. Maniatis NA, Christodoulous C, Legakis N.f. Streptococcus agalactiac: a vaginal pathogen? J Med Microbiol 1996: 44: 199-202.
12. Bump RC, Sachs LA, Buesching III JW. Sexually transmissible infectious agents in sexually active and virginal asymptomatic adolescent girls. J Pediatrics 1986;77:488-4.
13. Baker CJ, Goroff DK, Alpert S et al. Vaginal colonization with group B-streptococcus: A study in colloge women. J Infect Dis 1977; 135:392-7.
14. Anthony BF. The epidemiology of Group B-streptococei in man. Antibiot Chemother 1985; 35: 10-6.