

Common Causes of Vaginal Infections in Women with Vaginal Discharge Attending the Outpatient Clinics of the Maternity Teaching Hospital in Erbil

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Abstract

Background: Vaginal infections are common gynecological problem of women attending consultancy clinics.

Objective: To find out the most common causes of vaginal infections among women in Erbil city.

Patients and Methods: A cross sectional study carried out at the Consultancy Clinics of Erbil Maternity Teaching Hospital through the period from 1st of July 2015 to 31st of January 2016 on a convenience sample of 101 women in reproductive age attending the clinics suffering from vaginal discharge. Vaginal specimen was taken from each woman by sterile cotton with assistance of nurse, and was sent for culture and sensitivity test in the hospital laboratory.

Results: Culture results showed growth of normal flora in 29.7% of women, bacterial growth in 29.7% of women, fungal growth (*Candida albicans*) in 22.8% of women and mixed growth (bacterial and fungal) in 17.8% of women. Bacterial infection was significantly observed in vaginal discharge of women of older age group ($p=0.005$), rural residence ($p<0.01$) and pregnant women ($p=0.03$). The main risk factors for bacterial vaginosis were use of non-hygienic products ($p=0.03$), long marriage duration ($p<0.001$).

Conclusion: The study concluded that bacteria were the commonest cause of vaginal discharge with and without fungal mixed infection.

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Introduction

Lactobacillus acidophilus microbes are normally present in vagina from puberty to menopause and responsible for lactic acid secretion that inhibits microbial growth [1] Vaginitis represents a common gynecological problem of women attending Consultancy Clinics [2]. It is asymptomatic in most of cases and caused by non-infectious causes and infectious causes as bacterial vaginosis, candidiasis and

trichomoniasis. Vaginal discharge, itching and discomfort are the main symptoms of vaginitis [3]. The prevalent risk factors for infectious vaginitis are sexual activity, antibiotic use, pregnancy and immunosuppression [4].

Bacterial vaginosis is very common vaginal infection constituted about 50% of vaginitis and up to 70% in prostitutes [5-7]. Many obstetric and gynecological complications were associated with bacterial vaginosis as

preterm delivery, low birth weight and pelvic inflammatory diseases [8].

Trichomoniasis is a sexually transmitted disease that lives and multiply in urogenital tract of both men and women but it is rarely pathogenic in men [9, 10]. Its common complications in pregnant women are premature rupture of membrane, preterm birth and low birth weight infants [11].

Candida albicans is yeast like fungi found normally in oral cavity, gastrointestinal tract and genital tract of both men and women. Vaginal thrush or candida vulvovaginitis occurred after disruption to equilibrium between host and candida flora [12]. It affects more than two thirds of adult women with high recurrence rate reached to 50% [5]. Many complications of candida infection on women were reported such as pelvic inflammatory disease and infertility [13].

Recent studies in Erbil found high prevalence of genital tract infection among pregnant and non-pregnant women which accompanied by complications with its big burden on health system [14, 15].

This study was carried to find out the most common causes of vaginal infections among women with vaginal discharge in Erbil city. .

Patients and Methods

A descriptive cross sectional study carried out at the Consultancy Clinics of Erbil Maternity Teaching Hospital through the period from 1st of July 2015 to 31st of January 2016. All women in the reproductive age complaining from vaginal discharge visiting the consultancy clinics were included in this study. Exclusion criteria were history of antibiotic intake in last week, trichomoniasis, chemical douching, and women with genital malignancy. A convenience sample of 101 women was selected.

The clinical diagnosis and data collection was done by the researcher through direct interview and filling of a self-designed questionnaire. The questionnaire included sociodemographic characteristics, obstetric history, sexual history, clinical features and cultures results of women. Aseptically, using cuscus speculum, a high vaginal specimen was taken from each woman by sterile cotton with assistance of nurse. The specimens were transmitted in sterile tubes to the maternity teaching hospital laboratory. The specimen was mixed with drop of isotonic saline and examined microscopically then gram staining and bacteriological culture in blood agar and Machonkey agar, incubated at 37C° temperature for 24 hour, and examined next day to identify different types of bacteria. Candida species were diagnosed by microscope after identification of more than 3 gram positive budding yeast cells .

A verbal consent was obtained from each woman before being enrolled in the study. The study was approved by the hospital administration

Statistical analysis

The data were analyzed by using statistical package for the social sciences software version 20. The results were presented as tables and/or graphs. Chi-square was used for statistical analysis of categorical variables. Fisher's exact test was used when expected count of more than 20% of the cells of the table was less than 5. One way ANOVA analysis was used to compare more than two means. In all statistical analysis, level of significance (p-value) was set at ≤ 0.05 .

Result

A total of 101 women were included in this study, their mean age was 33 ± 9 years, 36.6% of them were in age group 20-29 years. Slightly more than half (63.3%) of studied women were urban residents and 85.2% of them were housewives as shown in table (1).

Table (1): Sociodemographic characteristics of study sample.

| Variable | No. (%) |
|-----------------------------------|--------------------|
| Age mean ± SD (33±9 years) | |
| <20 years | 5 (4.9) |
| 20-29 years | 37 (36.6) |
| 30-39 years | 30 (29.7) |
| ≥40 years | 29 (28.8) |
| Residence | |
| Urban | 64 (63.3) |
| Rural | 37 (36.7) |
| Occupation | |
| Housewife | 86 (85.2) |
| Student | 3 (2.9) |
| Employed | 12 (11.9) |
| Pregnancy | |
| Non-pregnant | 22(21.8) |
| Pregnant | 79 (78.2) |
| Total | 101 (100.0) |

Culture results revealed growth of normal flora in 29.7% of women, bacterial growth in 29.7% of women, fungal growth (Candida

albicans) in 22.8% of women and mixed growth (bacterial and fungal) in 17.8% of women as shown in table (2).

Table (2): Culture results of study sample.

| Culture results | No. (%) |
|----------------------------|--------------------|
| Normal flora | 30 (29.7) |
| Bacterial | 30 (29.7) |
| Fungal (Candida) | 23 (22.8) |
| Mixed (bacterial & fungal) | 18 (17.8) |
| Total | 101 (100.0) |

According to table (3), Bacterial infection was significantly higher in vaginal discharge of women in age group ≥40 years (p=0.005). The bacterial infection was significantly more prevalent among rural resident women (p<0.01). No

significant differences were observed among women with different culture results regarding their occupation (p=0.5). There was a significant association (P= 0.03) between pregnancy and bacterial infection.

Table (3): Culture findings by certain socio-demographic characteristics of women.

| Variable | Normal flora No. % | Bacterial No. (%) | Fungal No. (%) | Mixed No. (%) | Total No. (%) | P value |
|-------------------|-----------------------|----------------------|-------------------|------------------|------------------|------------------|
| Age | | | | | | 0.005* |
| <20 years | 3 (60.0) | 0 (0.0) | 2 (40.0) | 0 (0.0) | 5 (100.0) | |
| 20-29 years | 15 (40.5) | 8 (21.6) | 8 (21.6) | 6 (16.2) | 37 (100.0) | |
| 30-39 years | 11 (36.7) | 4 (13.3) | 8 (26.7) | 7 (23.3) | 30 (100.0) | |
| ≥40 years | 1 (3.4) | 18 (62.1) | 5 (17.2) | 5 (17.2) | 29 (100.0) | |
| Residence | | | | | | <0.01* |
| Urban | 20 (46.9) | 8 (12.5) | 15 (23.4) | 11 (17.2) | 54 (100.0) | |
| Rural | 10 (0.0) | 22 (59.5) | 8 (21.6) | 7 (18.9) | 47 (100.0) | |
| Occupation | | | | | | 0.5** |
| Housewife | 27 (31.4) | 26 (30.2) | 17 (19.8) | 16 (18.6) | 86 (100.0) | |
| Student | 0 (0.0) | 0 (0.0) | 2 (66.7) | 1 (33.3) | 3 (100.0) | |
| Employed | 3 (25.0) | 4 (33.3) | 4 (33.3) | 1(8.3) | 12 (100.0) | |
| Pregnancy | | | | | | 0.03** |
| Non pregnant | 11(50.0) | 1 (4.5) | 5 (22.7) | 5 (22.7) | 22 (100.0) | |
| Pregnant | 19 (24.0) | 29 (36.7) | 18 (22.8) | 13 (16.5) | 79 (100.0) | |

*calculated by Chi-square test. **calculated by Fishers exact test.

No significant association was demonstrated between culture results and history of preterm labour (p=0.5). Bacterial

infection was significantly (P= 0.03) associated with use of non-hygienic products as shown in table (4).

Table (4): Culture results according to history of preterm labour and hygienic products.

| Variable | Normal flora | Bacterial | Fungal | Mixed | Total | P value |
|----------------------------------|--------------|-----------|-----------|-----------|------------|---------------------|
| | No. (%) | No. (%) | No. (%) | No. (%) | No. (%) | |
| History of preterm labour | | | | | | 0.5** NS |
| No | 25 (34.2) | 21 (28.8) | 15 (20.5) | 12 (16.4) | 73 (100.0) | |
| Yes | 5 (17.9) | 9 (32.1) | 8 (28.6) | 6 (21.4) | 28 (100.0) | |
| Use of hygienic products | | | | | | 0.03* |
| No | 9 (20.0) | 20 (44.4) | 11 (24.4) | 5 (11.1) | 45 (100.0) | |
| Yes | 21 (37.5) | 10 (17.9) | 12 (21.4) | 13 (23.2) | 56 (100.0) | |

*Significant = (P≤0.05). **NS= Not significant.



Marriage duration of studied women was significantly higher among women diagnosed with mixed vaginal infection ($p < 0.001$). Sexual activity have no significant association ($P = 0.721$) with vaginal infection as shown in table (5).

Bacteria of different species were isolated from 47.5% of vaginal specimens. Details of bacterial species and *Candida albicans* isolated from vaginal discharge

Table (5): Culture results according to duration of marriage and sexual activity of women.

| Culture results | Marriage duration (years) | Sexual activity (per week) |
|-----------------|---------------------------|----------------------------|
| | Mean±SD | Mean±SD |
| Normal flora | 13.4±9.0 | 4.5±2.3 |
| Bacterial | 13.4±9.1 | 5.0±2.0 |
| Fungal | 12±9.1 | 5.1±1.5 |
| Mixed | 18±9.8 | 5.2±1.5 |
| P value | <0.001* | 0.721 NS** |

*Highly Significant = ($P \leq 0.001$)

** NS= Not significant.

Discussion

Vaginal infection symptoms represent the main medical consultation causes in developing countries and carry higher future risks of co-morbidities [16].

Bacteria were the commonest micro-organism that followed by fungal infection and mixed infection. This is similar to results of study done by Kadir *et al* (2014) study in Iraq [17]. Also with study done by Mambo *et al* (2009) who showed that bacterial vaginosis is a common among women with vaginal symptoms [16]. Bacterial vaginosis is caused by distortion of vaginal ecosystem and change in normal flora associated with raised vaginal PH with invasion by aerobic and anaerobic species [18, 19, 20]. Other study found that 29.7% of studied women had bacterial vaginosis which is within the range of USA reports that found 10-30% of women at reproductive age had bacterial vaginosis [21].

Candida in present study was detected among 22.8% of women which is close to result of previous study done by Sihavong *et al* (2006) in Vietnam. Candidiasis was

predominately reported among pregnant women; many studies had revealed a positive relationship between yeast infection and female sexual hormones [22].

The present study found a significant association between increased age of women and bacterial vaginosis ($p=0.005$). This is consistent with the findings of Nwadioha *et al* (2010) study in Nigeria that revealed a high prevalence of bacterial vaginosis among women aged 40 years and more, which was attributed to higher sexual activity and higher gravidity, in addition to effect of decline in estrogen level and with elevated vaginal PH [13,19].

Women with rural residence had significantly high prevalence of bacterial vaginal infection in vaginal discharge ($p < 0.01$). This is attributed to poor hygiene and ignorance in rural areas. Mulu *et al* (2015) study in Ethiopia showed that rural residence and low socioeconomic status of women were major risk factors for bacterial and fungal vaginosis [19].

Pregnant women in this study had significantly higher rate of bacterial

vaginosis ($p=0.03$). This finding agrees with that reported by Gupta *et al* (2013) study in India which revealed that bacterial vaginal infection among pregnant women was linked with many obstetrical complications [18].

Use of non-hygienic products was a significant risk factor for bacterial vaginosis among studied women. This is similar to results of many previous literatures [18, 19]. The long marriage duration of women in the present study was significantly associated with mixed infection. Increased marriage duration is accompanied by multiple pregnancies and increased sexual activity with high prevalence of bacterial vaginosis and vaginal candidiasis [18].

Bacteria (single and mixed) were isolated from 47.5% of vaginal samples. This finding is much lower than that reported by a study in Tobrak, lybia (79.5%) [23]. Among those isolated bacterial species, *Staphylococcus aureus* and *Escherichia coli* were the predominant isolates about 18.8% for each species. This finding is nearly similar to that of Razzak *et al* study in Babylon governorate in 2011 [24]. *Staphylococcus aureus* and *Escherichia coli* similarly constitute the most commonly isolated bacterial species (20% and 18.2%, respectively) [24]. In the lybian study *Staphylococcus aureus* and *Escherichia coli* were also the most commonly isolated bacterial species (21.8% and 14.2%, respectively) [23].

The main limitation of present study is the unavailability of facilities for detection of *Trichomonas Vaginalis* in the hospital laboratory only is direct examination without culture.

In conclusion, bacteria were the commonest cause of vaginal infection among women with vaginal discharge attending the Consultancy Clinics in Erbil maternity teaching hospital. Increased age, rural residence, pregnancy, and long marriage duration were more likely to be associated

with bacterial vaginosis. Health education of women and use of hygiene practices should be emphasized for prevention of vaginal infection.

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