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# Prevalence Trichomoniasis and Candidiasis For Symptomatic Pregnant and Non Pregnant Women in Iraq

**Dhilal Mahdi AL-Muathen and Hayat Ghaith Sachit**
***Department of Basic Science, College of Dentistry, University of AL-Mustansiriyah***
**E-mail: hayat_gaith2000@yahoo.com**

## Abstract:

The prevalence of ***Trichomonas vaginalis*** **(TV)** and ***Candida albicans*** **(CA)** has been determined in 182 symptomatic married women (70 pregnant and 112 non pregnant) randomly selected from private gynecology clinics in Baghdad city. The relationship between infection and some risk factors was assessed.

Data were collected by questionnaire and vaginal swabs were examined microscopically. Of the 182 women the pregnant 4 infected with TV and19 with CA while non-pregnant 2 infected with TV and 14 with CA.

The age group between (20-29years) represents the highest frequency of infection with the two microorganisms. Abortion number and monthly family income were statistically non significant with high infection rates.

**Key words**: *Sexually transmitted infections, Trichomonas vaginalis, Candida albicans, Vaginal smears, Pregnancy, abortion.*

# دراسة انتشار داء المشعرات المهبلية وداء المبيضات لدى النساء الحوامل وغير الحوامل العرضيات في العراق

**ظلال مهدي المؤذن و حياة غيث ساجت**
***قسم العلوم الأساسية، كلية طب الأسنان، الجامعة المستنصرية.***

## الخلاصة:

تم تحديد مدى إنتشار كل من طفيلي المشعرات المهبلية وخميرة المبيضات لدى 182 امرأة متزوجة عرضية (70 حامل و112 غير حامل) تم انتقاؤهن عشوائيا من العيادات النسائية الخاصة في مدينة بغداد، كما تم تقييم العلاقة بين الإصابة بالكائنين المجهرين وبين بعض عوامل الاختطار، وجمعت المعطيات عن طريق استبيان وفحصت المسحات المهبلية مجهريا للتحري عن الطفيلي والخميرة.

بينت الدراسة أن هؤلاء النسوة الـ 182 كانت الحوامل منهن 4 مصابات بالمشعرة المهبلية و19 مصابة بخميرة المبيضات، في حين كانت النساء غير الحوامل إمرأتين مصابتين بالمشعرات المهبلية و14 إمرأة مصابة بداء المبيضات. أعلى إصابة كانت بين الفئة العمرية 29–20 سنة وبكلا الكائنين المجهرين، وتبين إن عدد مرات الإجهاض والدخل الشهري لا يترابط ترابطاً يعتد به إحصائياً مع إرتفاع حالات الإصابة بكلا الكائنين المجهرين.

**كلمات مفتاحية:** *الإصابات المنتقلة جنسياً، المشعرات المهبلية، المبيضة البيضاء، مسحات مهبلية، الحمل، الإجهاض.*

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## Introduction:

In recent years there has been growing concern about reproductive tract infections (RTIs), especially those that are sexually transmitted[1]. The women sexually transmitted infections (STIs) are often chronic and present with little or no symptoms but eventually may lead to sever sequels such as chronic pelvic inflammatory disease, ectopic pregnancy and infertility[2].

The microbiology of vaginitis has been studied frequently and the most common types reported are ***Gardneralla, Candida*** and ***Trichomonas vaginalis*** TV[3]. *Trichomonas vaginalis* is a primitive protozoan infecting of the urogenital tract of humans[4]. Although there are reports that trichomoniasis cases are declining in some developed areas[5], some evidence suggest that sexually active inner-city and third world populations are experiencing a resurgence of the disease[6]. An estimated 7.4 million new cases occur annually[7].

Pregnant women infected with TV may be at increased risk of premature labor, low birth offspring and post abortion or post-hysterectomy infection[8].

Candidiasis is mostly due to ***Candida albicans*** CA and may be associated with diabetes, pregnancy and prolong use of antibiotics. Patient presents with vaginal discharge and pruritis, discharge appears to be like curdled milk and deep erythematic of vulva and vagina is often seen[9].

The objective of this study was to investigate the association between tricho-moniasis and candidiasis, pregnancy and some of the risk factors.

## Materials and Methods:

One high vaginal swab was collected aseptically from each of 182 symptomatic married women (70 pregnant and 112 non pregnant) attending some private gynecology clinics in Baghdad city between January 2010 and July 2010. Vaginal samples were immediately analyzed by wet mount microscopy (x400) magnification for evidence of TV and CA. Trichomoniasis was identified by trophozoite movement in the wet film with special flagellated motility [10].

Candidiasis was diagnosed by using of Gram stain. It appears positive yeast like[11], the yeast cell appears spherical, oval or elongated in shape about 3-5 u in diameter[12].

The women were asked about socio–demographic characteristics and genital symptoms for purposes of the questionnaire.

The women who had been received treatment for TV or antibiotics and antifungal within the past week of examination were excluded from the study.

**Statistical analysis:**

The following statistical data analysis approaches were used in order to analyze and assess the results of the study under application of the statistical package (SPSS) version (10.0):

1 - Descriptive data analysis:
   a - Contingency Coefficients for the association tables.
   b - Graphical presentation by using:
      - Cluster Bar Charts.
      - Inferential data analysis: These were used to accept or reject the statistical hypotheses, which included the Contingency Coef-ficients test for the cause's correlation ship of the association tables.
2 - Inferential data analysis:
   These were used to accept or reject the statistical hypotheses, which included the Contingency Coefficients test for the cause's correlation ship of the associa-tion tables.

## Result and Discussion:

In the present study, 21.43% of all the women participating in the survey were

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infected with TV (3.3% of the past ratio) and CA 18.13%). Only 4 (5.71%) pregnant women were infected with TV, while the study revealed 19 (27.14%) pregnant women infected with CA. Also the study shows that non pregnant women infected with TV and CA in rates (1.8% and 12.5%) respectively (Table-1, figure-1).

**Table-1: Distribution of Pathogens (T.V. & C.A.) among studied women (Pregnant & Non pregnant).**

| Type of pathogen | No. and Percents | Groups | | Total | C.S. *P*-value |
|---|---|---|---|---|---|
| | | Pregnant | Non pregnant | | |
| T. V. | No. | 4 | 2 | 6 | CC = 0.217 *P*= 0.011 |
| | % Groups | 5.7% | 1.8% | 3.3% | |
| C. A. | No. | 19 | 14 | 33 | |
| | % Groups | 27.1% | 12.5% | 18.1 % | |
| Neg. | No. | 47 | 96 | 143 | |
| | % Groups | 67.1% | 85.7% | 78.6 % | |
| Total | No. | 70 | 112 | 182 | |
| | % Groups | 100% | 100% | 100 % | |

**S: Sig. at P< 0.05; Testing of random distribution are based on (Contingency Coefficient test).**
NS: Non significant at *P*>0.05, S: Significant at *P*<0.05, HS: Highly significant at *P*<0.01.

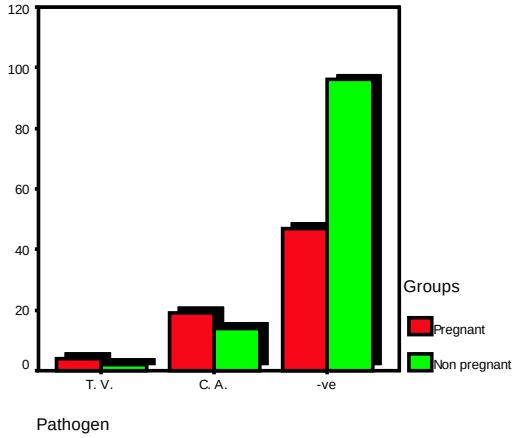


**Figure-1: Cluster bar chart for distribution of Pathogens (T.V. & C.A.) among studied women (Pregnant & Non pregnant).**

In (Table-2, figure-2), the age group (20-29 years) had the highest prevalence rate of the infections with each of the pathogens TV and CA (50.0% and 48.5%) respectively, while the age group (30-39 years) had the lowest prevalence rate.

**Table-2: Distribution of Pathogens (T.V. & C.A.) among studied women according to Age Groups with comparison significant.**

| Age years | No. and Percents | Pathogen | | Total | C.S. *P*-value |
|---|---|---|---|---|---|
| | | T.V. | C.A. | | |
| 20-29 | No. | 3 | 16 | 19 | CC = 0.070 *P*= 0.907 |
| | % Pathogen | 50.0% | 48.5% | 48.7 % | |
| 30-39 | No. | 1 | 8 | 9 | |
| | % Groups | 16.7% | 24.2% | 23.1 % | |
| 40-49 | No. | 2 | 9 | 11 | |
| | % Groups | 33.3% | 27.3% | 28.2 % | |
| Total | No. | 6 | 33 | 39 | |
| | % Groups | 100% | 100% | 100 % | |

NS: Non significant at *P*>0.05, S: Significant at *P*<0.05, HS: Highly significant at *P*<0.01.

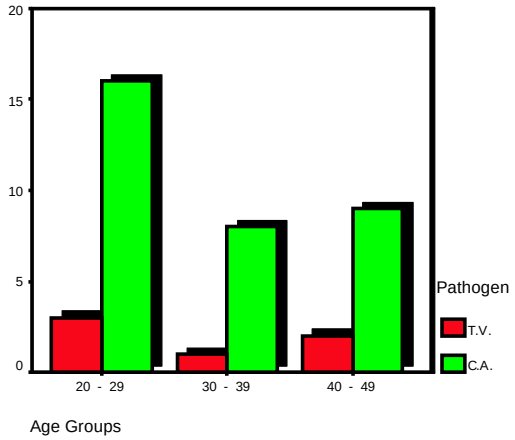


**Figure-2: Cluster bar chart for distribution of Pathogens (T.V. & C.A.) among studied women according to Age Groups.**

Table-3 and figure-3 shows that women having monthly family income less than 200$ had the highest infection rates with each of TV and CA (50.o % and 60.61%) respectively. In the same table the lowest infection rate with TV and CA were recorded in women having monthly income >500$ and (16.7%) 200-500$ (15.2%) respectively

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**Table-3: Distribution of Pathogens (T.V. & C.A.) among studied women according to according to Monthly Income with comparison significant.**

| Monthly Income ($) | No. and Percents | Pathogen | | Total | C.S. *P*-value |
|---|---|---|---|---|---|
| | | T. V. | C. A. | | |
| > 500 | No. | 2 | 5 | 7 | CC = 0.170 *P*= 0.560 NS |
| | % Pathogen | 33.3 % | 15.2 % | 17.9% | |
| 200 - 500 | No. | 1 | 8 | 9 | |
| | % Pathogen | 16.7 % | 24.2 % | 23.1% | |
| < 200 | No. | 3 | 20 | 23 | |
| | % Pathogen | 50.0 % | 60.6 % | 59.0% | |
| Total | No. | 6 | 33 | 39 | |
| | % Pathogen | 100% | 100% | 100% | |

NS: Non significant at *P*>0.05, S: Significant at *P*<0.05, HS: Highly significant at *P*<0.01.

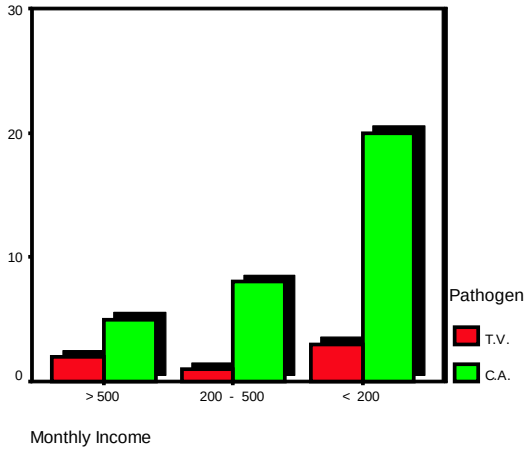


**Figure-3: Cluster bar chart for distribution of Pathogens (T.V. & C.A.) among studied women according to Monthly Income.**

In table-4 and figure-4, the study revealed that women with number of abortion of more 2, 3 had the highest infection rates with TV (33.33%) and with (0-1 abortion number) had the lowest and (16.7%), while the highest infection rates with CA was recorded in 3 and over abortion number women (36.4%), and the lowest in 1 and 0 abortion number (15.2%) and (18.2%) respectively.

**Table-4: Distribution of Pathogens (T.V. & C.A.) among studied women according to number of abortions with comparison significant.**

| No. of Abortion | No. and Percents | Pathogen | | Total | C.S. *P*-value |
|---|---|---|---|---|---|
| | | T. V. | C. A. | | |
| Non | No. | 1 | 6 | 7 | CC = 0.033 *P*= 0.998 NS |
| | % Pathogen | 16.7% | 18.2% | 17.9% | |
| one time | No. | 1 | 5 | 6 | |
| | % Pathogen | 16.7% | 15.2% | 15.4% | |
| two times | No. | 2 | 10 | 12 | |
| | % Pathogen | 33.3% | 30.3% | 30.8% | |
| three times and more | No. | 2 | 12 | 14 | |
| | % Pathogen | 33.3% | 36.4% | 35.9% | |
| Total | No. | 6 | 33 | 39 | |
| | % Pathogen | 100% | 100% | 100% | |

NS: Non significant at *P*>0.05, S: Significant at *P*<0.05, HS: Highly significant at *P*<0.01.

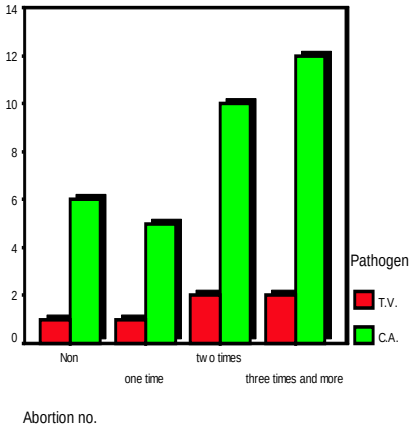


**Figure-4: Cluster bar chart for distribution of Pathogens (T.V. & C.A.) among studied women according to no. of Abortions.**

Table-5 explains that lower abdominal pain was the highest frequency of the symptoms in all infected women with trichomoniasis and abnormal vaginal bleeding was the lowest, while the same table shows that vaginal discharge and lower abdominal pain were the highest frequency of the symptoms in the infected women with candidiasis and dyspareunia and abnormal vaginal bleeding were the lowest.

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**Table-5: Frequency of symptoms associated with trichomoniasis and candidiasis.**

| Abnormal | TV. +ve n=6 | | CA. +ve n=33 | | Total +ve n=39 | |
|---|---|---|---|---|---|---|
| | No. | % | No | % | No. | % |
| vaginal discharge | 3 | 50.0 | 12 | 36.4 | 15 | 38.5 |
| lower abdominal pain | 5 | 83.33 | 12 | 36.4 | 17 | 43.5 |
| Vulvo vaginal itching | 3 | 50.0 | 10 | 30.3 | 13 | 33.33 |
| Dyspareunia | 2 | 33.33 | 7 | 21.21 | 9 | 23.1 |
| Abnormal vaginal bleeding | 1 | 16.70 | 7 | 21.21 | 8 | 20.51 |

NS: Non significant at $P>0.05$, S: Significant at $P<0.05$, HS: Highly significant at $P<0.01$.

## Discussion:

In the present study results shows that a meaningful relationship had been reported with (CC=0.217). As well as, significant relationship at $P<0.5$, with slight increase in infected pregnant women compared with non pregnant.

These results were consisting with previous studies, that attributed this increment to hormonal and immunologic alteration that collectively increase the liability of vaginal tissue for such infections[13]. Also this increase may be in part due to a low vaginal pH which in optimal for fungal growth[14].

In this study, in spite of that TV and CA were common in the younger age group (20-29 years) the results shows that weak relationship had been reported with (CC-0.070) .As well as, accounted no significant relationship at P> 0.05, with slight increase in infected of elderly women compared with who are less than 40 years old and that is agreed with Ali, S.F.[15] in menopause age women. The increment in younger women may be related to the greater sexual activity of this age group.

Results shows that weak correlation ship had been reported with (CC=0.170). As well as ,accounted no significant relationship at $P>0.05$, with slight increase in infected poor women compared with who had less income less than 200$ monthly and this is consistent with Nourian, A. et al[16].

Results shows that weak relationship had been reported with (CC=0.033).As well as, accounted no significant relationship at $P>0.05$, in light of increasing number of abortions compared with who had non or only one time abortion the same is reported with Cotch, M.F. et al[17], the largest observation study of *candida* in pregnancy found no association with preterm birth. While Riduan, J.M. et al[18] reported that Trichomoniasis was associated with premature membrane rupture and preterm delivery, and this is disagreed with our findings, we believed that prevalence rates during pregnancy vary in the different published papers according to the populations examined.

Our data demonstrated that common symptoms associated with trichomoniasis are (lower abdominal pain, abdominal vaginal discharge, and vulvo vaginal itching). The same findings were reported in Candidiasis, the patient presents with vaginal discharge and pruritus with Robertson,W. [9].

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