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Seroprevalence of Human Papilloma Virus in Aborted Women in Kirkuk City

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ABSTRACT

The aimed of the study was to evaluate the Seroprevalence of human papilloma virus (HPV) in aborted women. A cross-sectional study was carried out in Kirkuk city from 10th of March 2017 to 10th of July 2017 . The number of aborted women understudy were 65 women who attended for curettage in Kirkuk general hospital. The control group who were matched to the patients studied included 30 normal pregnant women at the full term of pregnancy, women with *Toxoplasma gondii*, rubella and cytomegalovirus infections were excluded from the study. Five ml of blood was collected by vein puncture from each woman in the study, the obtained sera then organized to determine of HPV 16 E7 protein in patients and control using ELISA technique.

The study showed that the highest rate of HPV infection (35.38%) was recorded among women with abortion comparing with the control group, with a highly significant relation. The study showed that 75.38% of women had aborted in the 1st trimester of pregnancy and the lowest rate of abortion 9.24% was in the 3rd trimester. The study showed that the highest rate of HPV infection was found in women with 1st trimester of abortion (38.78%) and the lowest rate was in the 3rd trimester of abortion. The study showed that the highest rate of HPV infection was recorded among aborted women who have suffered from one abortion during their marriage life.

It was concluded that there was a significant relation of HPV with abortion spatially in women who were aborted in the first trimester of pregnancy.

Keywords: HPV; Seroprevalence; abortion; Kirkuk.

الانتشار المصلي لفيروس الورم الحليمي البشري في النساء المجهضات في

مدينة كركوك

جاكلين زيا خوشابا سلوى سعدون مصطفى مهند عبدالله العزاوي

دائرة صحة محافظة كركوك

الخلاصة

الهدف من هذه الدراسة هو تقييم الانتشار المصلي لفيروس الورم الحليمي البشري (HPV) في النساء المجهضات. أجريت دراسة مقطعية مستعرضة في مدينة كركوك من 10 مارس 2017 إلى 10 يوليو 2017. وكان عدد النساء اللاتي تم إجهاضهن من النساء 65 امرأة اللواتي شاركن في التجريف في مستشفى كركوك العام. شملت المجموعة الضابطة التي تمت مقارنتها مع المرضى ، 30 امرأة حوامل عاديّات في فترة الحمل الكاملة ، وتم استبعاد النساء المصابات بمرض داء القطط *Toxoplasma gondii* ، والحصبة الألمانية ، والعدوى بفيروس المضخم للخلايا من الدراسة. تم جمع خمسة مل من الدم عن طريق ثقب في الوريد من كل امرأة في الدراسة ، تم الحصول على الأمصال التي تم الحصول عليها بعد ذلك لتحديد البروتين HPV 16 E7 في المرضى والتحكم باستخدام تقنية ELISA. وأظهرت الدراسة أن أعلى معدل للإصابة بفيروس الورم الحليمي البشري (35.38 %) تم تسجيله بين النساء اللواتي يعانين من الإجهاض مقارنة بالمجموعة الضابطة ، مع وجود علاقة ذات أهمية كبيرة. أظهرت الدراسة أن 75.38 % من النساء تم إجهاضهن في الثلث الأول من الحمل وأن أقل معدل للإجهاض كان 9.24 % في الربع الثالث من الحمل. وأظهرت الدراسة أن أعلى معدل للإصابة بفيروس الورم الحليمي البشري تم العثور عليه في النساء ذوات الثلث الأول من الإجهاض (38.78 %) وأدنى معدل في الثلث الثالث من الإجهاض. وأظهرت الدراسة أن أعلى معدل من عدوى فيروس

الورم الحليمي البشري تم تسجيله بين النساء اللاتي تعرضن للإجهاض اللائي عانين من إجهاض واحد خلال فترة زواجهن.

وخلص إلى أن هناك علاقة كبيرة بين فيروس الورم الحليمي البشري والإجهاض مكانيا في النساء اللواتي أجهن في الأشهر الثلاثة الأولى من الحمل.

الكلمات الرئيسية: فيروس الورم الحليمي البشري ؛ الانتشار المصلي. الإجهاض؛ كركوك.

1. Introduction

Recurrent miscarriage, habitual abortion, or recurrent pregnancy loss (RPL) is three or more consecutive pregnancy losses [1]. Infertility differs because it is the inability to conceive. In many cases the cause of RPL is unknown. Recurrent miscarriage (RM) is defined as the occurrence of three or more consecutive losses of pregnancy. According to this definition, it affects about 1% of couples trying to have a baby [2]. However, many clinicians define RM as two or more losses; this increases the percentage of RM from 1% to 5% of all couples trying to conceive [3]. Mammalian pregnancy is thought to be a state of immunological tolerance. The mechanisms underlying this phenomenon are still poorly understood, successful mammalian pregnancy depends upon the tolerance of a genetically incompatible fetus by the maternal immune system. When tolerance is not achieved pregnancies fail [1].

Human papillomavirus (HPV) is a viral infection that is passed between people through skin-to-skin contact. There are more than 100 varieties of HPV, 40 of which are passed through sexual contact and can affect your genitals, mouth, or throat [4]. Human Papillomavirus (HPV), which is known as a well-established cause for cervical cancer, does though constitute a candidate. The over 180 known HPV-types are small, double-stranded DNA viruses with a circular genome of nearly 8,000 base pairs [5]. HPV infections are common, but about 90% of all infections can be cleared within less than 2 years by unknown mechanisms [6]. HPV-6 and HPV-11 are the most common low-risk types and are found to be causative for genital warts [4]. Cancer associated high-risk types include HPV-16 and HPV-18 [5] and there is growing evidence of HPV infections playing a relevant role in other anogenital and head and neck cancers [7]. Worth to mention is also the morbidity of cutaneous HPV lesions, particularly in immunosuppressed people [8]. There is some evidence that elevated steroid hormone levels during pregnancy influence the increase of HPV virus replication by interacting with hormone response elements in the viral genome, thereby giving another possible explanation for the higher incidence of HPV infection during pregnancy [9, 10].

2. Material and methods

A cross-sectional study was carried out in Kirkuk city from 10th of March 2017 to 10th of July 2017. The number of aborted women understudy were 65 women who attended for curettage in Kirkuk general hospital). Included 30 normal pregnant women at the full term of pregnancy, women with *Toxoplasma gondii*, rubella and cytomegalovirus infections were excluded from the study.

2.1. Methods

Five ml of blood was collected by vein puncture from each woman in the study, the obtained sera then organized to determine of HPV 16 E7 protein in patients and control using ELISA technique.

2.2. Statistical analysis:

Computerized statistically analysis was performed using IBM SPSS ver 23.1 statistic program. A comparison was carried out using Chi-square (X^2). The *P*. value <0.05 was considered statistically significant, and for the result which its *P*. value *was* less than 0.01 was considered highly significant, while for those which its *P*. value was greater than 0.05 considered non-significant statistically.

3. Results

Table 1 show that the highest rate of HPV infection (35.38%) was recorded among women with abortion comparing with the control group, with a highly significant relation.

Table 1: Seroprevalence of HPV in aborted and pregnant women.

HPV 16 E7 -ELISA	Aborted women		The control group (pregnant women)		P. value
	No.	%	No.	%	
Positive	23	35.38	3	10	0.0091
Negative	42	64.61	27	90	
Total	65	100	30	100	

Table 2 shows that 75.38% of women had aborted in the 1st trimester of pregnancy and the lowest rate of abortion 9.24% was in the 3rd trimester.

Table 2: Distribution of aborted women according to trimester of pregnancy

Trimester of abortion	HPV positive result	
	No.	%
1 st trimester	49	75.38
2 nd trimester	10	15.38
3 rd trimester	6	9.24
Total	65	100

The study showed that the highest rate of HPV infection was found in women with 1st trimester of abortion (38.78%) and the lowest rate was in the 3rd trimester of abortion, Table 3.

Table 3: Distribution of HPV positive result according to trimester of abortion.

Trimester of abortion	Total No.	HPV positive result	
		No.	%
1 st trimester	49	19	38.78
2 nd trimester	10	3	30
3 rd trimester	6	1	16.67

Figure 1 shows that the highest rate of HPV infection was recorded among aborted women who have suffered from one abortion during their marriage life.

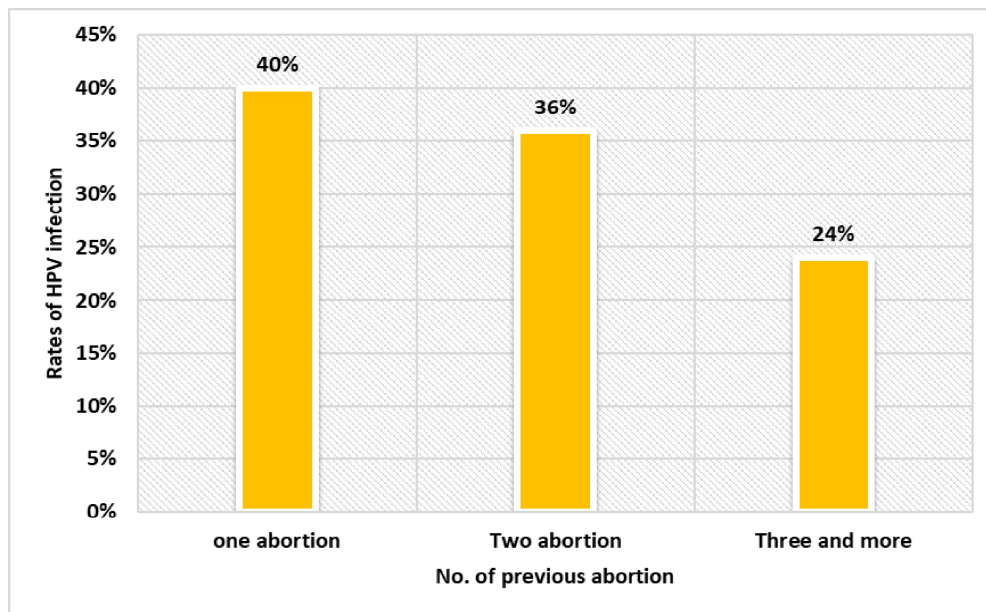


Figure 1: Distribution of aborted women according to number of abortions.

4. Discussion:

In comparison to HPV prevalence found in normal pregnancies and spontaneous abortions and were found to have higher HPV positive detection rates ($P < 0.01$). Pregnancy has previously proven to be a state of mild immunosuppression due to the decrease in the number of natural killer cells [11], possibly making pregnant women more prone to infections with, for example, HPV. Various immunological theories have been discussed to explain the possibility for pregnancy and the survival of the “semiallogeneic” fetus. Theories include immunological privilege in the uterus, antigenic immaturity of the fetus, and maternal Also there is some evidence that elevated steroid hormone levels during pregnancy influence the increase of HPV virus replication by interacting with hormone response elements in the viral genome, thereby giving another possible explanation for the higher incidence of HPV infection during pregnancy [12]. In 2014, Liu *et al.* [13] conducted a systematic review on HPV prevalence in pregnant and nonpregnant women and reported an increased risk of HPV infection in pregnant women, thereby supporting the debate of how far HPV may be involved in adverse pregnancy outcomes. Various authors report infection with HPV during pregnancy to be associated with the risk of spontaneous abortion, spontaneous

preterm delivery, and placental abnormalities [14-16]. However, it can be stated that studies from the USA consistently report a significantly higher HPV prevalence in spontaneous abortions and spontaneous preterm deliveries compared to normal pregnancies, in both cervical and placental tissue [15, 17, 18]. The result of the current study was supported by several studies done earlier. Carlson *et al* [19] and Yong *et al* [20] presented that women who suffer from spontaneous abortion are in 1st trimester and 2nd trimester while some of the women were multigravida had a previous stillbirth, preterm birth, multiple birth, and previous miscarriage. Chetty *et al* [21] demonstrated a significant relation of abortion number with women investigated with a previous miscarriage. Strobino *et al* [22] found that 38% of women with abortion were aborted two times due to infections. In theory, either fetal or maternal pathology could lead to recurrent spontaneous abortions [23]. Several studies demonstrated that women with repeated abortion were more likely to have chromosomally normal rather than chromosomally abnormal losses and the usual causes were maternal infection [24-26].

5. Conclusions:

It was concluded that there was a significant relation of HPV with abortion spatially in women who were aborted in the first trimester of pregnancy.

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