Reproductive Factors Associated to Human Papillomavirus Infection in Iranian Woman

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Abstract

Objective: In recent years, humman papilomaviruses (HPV) infection is the most common type of sexual trasmitted diseases (STD) in majority of countries. It's a significant source of morbidity and mortality worldwide. In this study, we aimed to compare the history of reproductive disease between two groups of Iranian women with and without HPV infection through colposcopy precedure.

Materials and methods: This case - control study included 210 women reffered to a training gynecology hospital of Tehran University of Medical Science in Tehran. Case group was composed of 70 women with diagnosis of HPV infection, while control group was composed of 140 women with no sign of mentioned-infectious diseases of the control group. Reproductive history was prepared using the standard questionnaire, and obtianed data were analized by SPSS 20.

Results: Our findings showed that the risk factors for HPV infection were as follows: low parity (p = 0.000), reduction of number of weekly sexual intercourse (p = 0.000), no consumption of oral contraceptive pill (OCP) (p = 0.006), and history of withdrawal contraceptive method (p = 0.001).

Conclusion: Improvement of our knowledge about reproductive factors associated with HPV may help us to identify women at risk and to develope different methods of preventive interventions.

Keywords: Sexually Transmitted Diseases (STD), Human Papilloma Virus (HPV), Iranian Women

Introduction

Nowadays, human papilloma viruses (HPV) has been known as the most common type of sexually transmitted infection (STI) in the United States (1). It is an important source of morbidity and mortality worldwide, and is also identified as a prerequisite for development of cervical cancer (2). Cervical cancer is the second most common type of cancer worldwide, comprising approximately 12% of all typesin women (3). In developing countries, cervical cancer is one out of two causes of mortality in women (4). About 10.0% out of 2329.08 million women aged 15 years or older worldwide, 8.3% out of 265,884 women in Asia and 6.6% out of 24.54 million women in Iran have been estimated to harbour cervical HPV infection at a given time (3). HPV infection may cause a variety of low grade squamous intraepithelial lesions in cervix and benign ones in anogenital areas

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known as condylomata acuminata (genital warts) (5). The psychological discomforts and stigma of genital warts, along with the physical discomforts associated with treatment, agonize the patients (6). HPV infection has been associated with high levels of trait anxiety, obsessions, compulsions, and above all, behaviours and worries due to hygiene and improbable infections (7). On other hands, subclinical and clinical HPV infections are responsible for high morbidity and impose a great burden on the health care system , so that It was concluded that cervical HPV-related disease accounted for total healthcare costs of $3.4 billion (8). Many epidemiological studies have supported the association between sexual activity and acquisition of HPV infection, so as the greater the number of sexual partners, the greater the risk of HPV infection (9). For women, sexual activity of their partner(s) is also important for determining the risk of HPV acquisition. Other risk factors associated with HPV infection include history of vulvar warts or infection with herpes simplex viruses (HSV) (10). Age also seems to be an important factor as HPV infection is consistently the most common STD in sexually active women younger than 25 years old (11). The presence of recrudescent chlamydia infections is an important factor for the clinical manifestations of anogenital warts (12). Nevertheless, there has been conflicting evidence that reproductive factors increase the risk of HPV (13). It is important to have a thorough and accurate understanding of the prevalence and risk factors of this infection (14) becasue this information will be helpful in implementation of future prevention strategies (15). In this study, we aimed to compare the history of reproductive disease between two groups of Iranian women with and without HPV infection through colposcopy precedure.

Materials and methods

After being approved by Scientific Ethics Committee of Tehran University of Medical Sciences (TUMS) in 2012, 210 women were recruited from the outpatient colposcopy clinic belonged to a training gynecology hospital of TUMS. Sampling was done during January to April. Women with an abnormal pap smear test as well as abnormal vaginal bleeding or resistant cervicitis had been refered to this clinic for further investigation. Colposcopy and biopsy of cervical lesion were undertaken for the differential diagnosis.

In this study, inclusion criteria used for selection were as follows: being mentally healthy and being referred to the clinic due to abnormal pap smear test. Case group was composed of 70 women with diagnosis of either condyloma acuminata in biopsy specimen of cervix or positive HPV for types 6, 11, 16, 18, 31, 35, and 50- 60, while control group was composed of 140 women with no sign of mentioned-infectious diseases of the control group. Two group were matched according to Iranian-descent, being in reproductive ages (15-49 years) and aquiring LSIL/HPV result in pap smear test. Biopsy specimen of cervix was taken by three gynecology specialists, and the spcimen was interpreted by the pathology laboratory of the same gynecology hospital.

After receiveing detailed information regarding to the objectives of the study, all women signed a written consent form and were asked to compelet a self-administered questionnaire. This questionnare included questions about socio-demographic triats, reproductive and medical history. The validity of questionnaire was performed by 12 members of the Faculty of Nursing & Midwifery School of TUMS. The Test-retest method was used to determine the reliability of the questionnaire and r = 0.85 - 1 was calculated.

The statistical analysis was performed using T- test, Chi- square and Fisher exact tests to compare frequencies between groups. Logistic regression models were used to identify marital factors associated independently with HPV infection. The value of $p < 0.05$ was considered statistically significant. Data analyze was done using SPSS 20.

Results

In this case-control study, 210 women with LSIL/HPV result on pap smear test were participated. The median age of all participated women was 35.052 ± 8.018 years, while the age ranged from 17 to 49 years. Most women in both groups had normal age at menarche (13-14 years). The median number of pregnancy in case group was 1.342 ± 1.371 times, but in control group was 2.328 ± 1.451 times. The median number of delivery in case group was 1.100 ± 1.078 times, whiel in control group was 2 ± 1.414 times. History of cesarean delivery was observed in 19.5% of cases and 25.4% of controls (only women with delivery history were assessed). None of women in case group had history of induced abortion, but in control group, 19% of women experinced induced abortion. History of infertility was observed in 6.1% of women in case group and

4.3% of women in control group. The median number of sexual intercourse per week in case group was 1.970 ± 1.103 times, while in control group was 1.603 ± 1.153 times. The history of contraceptive methods in cases and controls, respectively, were as follows: Injections of progesterone (5.7%, 4.3%); IUD (11.4%, 15%); T.L (5.7%, 10.7%); OCP (24.3%, 47.9%); withdrawal (71.4%, 54.3%); and condom (45.7%, 36.4%).

None of cases had history of familial cervical cancer, but 6.6% of women in control group reported history of cervical cancer in one of the family member. The characteristics of the study women in relation to HPV infection are reported in table 1.

Our findings showed that pregnancy number (p = 0.000), sexual intercourse number per week (p = 0.000), no consumption of OCP (p = 0.006), history of withdrawal contraceptive method (p = 0.001) were indepently associated with HPV infection (Table 1).

Discussion

This study was conducted to determine reproductive factors associated to HPV infection in Iranian women. Although HPV infection is the most commen STD worldwide, factors associated with this infection, except highrisk sexual behaviours, are either unknown, or the obtained results are inconsistent (3). Our findings showed reduction in the number of pregnancy associated with HPV infection, which were not in concordance with studies by S. Sukvirach et al. and JA. Kan et al. (16, 17). This conflict can represent differences in cultural context of society about pregnancy trends and interest. In addition, we found reduction of weekly sexual intercourse related to HPV infection, which was not in agreement with study by AN. Burchell, et al. (18). Differences in study method or selected population may lead to inconsistent result. In this study, among contraceptive methods, only withdrawal method was associated with HPV infection, whereas the study of

A. Safaei et al. didn't approve this reuslt (19). They presented that low number of HPV infected women led to an inappropriate conclusion. Although RL. Winer et al. (HR: 1.4, 95% CI: 1.1-1.8), P. Ammatuna et al. (p = 0.03) and Y-L. Qiao et al. (OR ~ 2) found relationship between OCP and HPV positivite (13, 20, 21), we found no relationship between these two variables (OR~4). Likely, more use of withdrawal contraceptive method among the cases causes lower consumption of OCP. In addition, there are severl studeies from different locations, like the USA, Warsaw, Poland, Govindpuri, and North India, which are in contrast or in concordance with our findigs about the other reproductive factors not to be associated with HPV infection (22-24). Distinction in sampling method or limition of study may be two reasons that cause varied results.

In conclusion, HPV infection and subsequnet cervical cancer are considered to be important public health problem worldwide. Some reproductive factors are associated with increasing incidence of this infection. Therefore, improvement of our knowledge about reproductive factors associated with HPV may help us to identify women at risk and to develope different methods of preventive interventions.

We hope that further comprehensive studies will be performed to assess reproductive factors associated with HPV infection in general papulation of Iranian women. These studies will present a clearer information about HPV infection in order to improv strategies for the prevention and treatment of HPV-associated lesions.

Acknowledgements

Table 1: Associations between HPV infection and reproductive factors in women with HPV/LSIL result on pap test

Reproductive factors	Frequency in group		p-value
	Cases (n=70)	Controls (n=140)	
Age at menarche (year)			
< 13	17 (24.3%)	21 (15.0%)	
13-14	28 (40.0%)	91 (65.0%)	
≥ 15	25 (35.7%)	28 (20.0%)	
Pregnancy number (time)			
0	29 (41.4%)	18 (12.9%)	
1	8 (11.4%)	28 (20.0%)	
2	21 (30%)	24 (17.1%)	0.000
3	4 (5.7%)	36 (25.7%)	
≥ 4	8 (11.4%)	34 (24.3%)	
Delivery number (time)			
0	29 (41.4%)	26 (18.6%)	
1	13 (18.6%)	25 (17.9%)	
2	20 (28.6%)	39 (27.9%)	
≥ 3	8 (11.4%)	50 (35.7%)	
Hx* of cesarean delivery			
Yes	8 (19.5%)	29 (25.4%)	
No	33 (80.5%)	85 (74.6%)	
Hx* of induced abortion			
Yes	0 (0.0%)	26 (19.0%)	
No	66 (100.0%)	111 (81.0%)	
Hx* of infertility			
Yes	4 (6.1%)	6 (4.3%)	
No	62 (93.9%)	134 (95.7%)	
Sexual intercourse number (time /week)			
≤ 1	33 (56.9%)	59 (44.0%)	
2	12 (20.7%)	38 (28.4%)	0.000
3	8 (13.8%)	25 (18.7%)	
≥ 4	5 (8.6%)	12 (9.0%)	
Hx of contraception method			
Hx* of progesterone injection			
Yes	4 (5.7%)	6 (4.3%)	
No	66 (94.3%)	134 (95.7%)	
Hx* of infertility of IUD			
Yes	8 (11.4%)	21 (15.0%)	
No	62 (88.6%)	119 (85.0%)	
Hx* of T.L**			
Yes	4 (5.7%)	15 (10.7%)	
No	66 (94.3%)	125 (89.3%)	
Hx* of OCP***			
Yes	17 (24.3%)	67 (47.9%)	0.006
No	53 (75.7%)	73 (52.1%)	
Hx* of withdrawal method			
Yes	50 (71.4%)	76 (54.3%)	0.001
No	20 (28.6%)	64 (45.7%)	
Hx* of condom			
Yes	32 (45.7%)	51 (36.4%)	
No	38 (54.3%)	89 (63.6%)	
Familiar Hx* of CC****			
Yes	0 (0.0%)	9 (6.6%)	
No	66 (100.0%)	128 (93.4%)	

*History   **Tubal ligation   ***Oral contraception pill   ****Cervical cance

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