

FULL PAPER

Risk factors of different types of HR-HPV in patients suffering from high-grade cervical intraepithelial neoplasia (CIN)

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Cancer is a chronic disease with a high prevalence both worldwide and in Iran. The present study was done to investigate the relationship between the frequency of different types of HR-HPV in patients suffering from high-grade cervical intraepithelial neoplasia (CIN) and the demographic characteristics of patients. In this descriptive analytical study, 302 patients with female gender were included. Out of 302 patients examined, the mean (standard deviation) of the patients' age was 34.12 (7.72) years. Regarding education, 25 (8.3%), 71 (23.5%), 97 (32.1%), 101 (33.4%), and 6(2%) had below diploma, diploma, between diploma and bachelors, bachelors and Masters, and PhD, respectively. Regarding Gravid, 63 (20.9%) had grade 1, 50 (16.6%) had grade 2, and 25 (8.3%) had grade 3. The biopsy from lesions was performed by a gynecologist under sterilized conditions according to the guidelines available in gynecology and obstetrics reference books. Next, the taken specimens were sent to the laboratory and their results were investigated. After collection, the data were introduced into SPSS 16, and analyzed through descriptive as well as analytical statistical methods. The results of this study can help clinical physicians to implement evidence-based practice.

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KEYWORDS

Cancer; HPV; cervical intraepithelial neoplasia; risk factors.

Introduction

Women's health as a group of individuals claiming a large population of society is notable as one of the most significant issues in the public health. Considering the role of women at home, place of residence, society, as well as the vulnerability of these individuals, in case of presence of any disease in them, numerous problems can occur in the patient and their family. Different chronic diseases afflict this group of society, including

cardiovascular disease, lung diseases, infectious diseases, psychological disorders and cancer [1-8].

Cancer is a chronic disease with a high prevalence both worldwide and in Iran [9-12]. One type of this disease is cervical cancer, which is the fourth most common and the fourth main cause of mortality by cancer in women in 2020 [13]. Cervical cancer is one of the causes of mortality resulting from cancer in developing countries. World Health Organization has estimated that by 2030 this

cancer would be the cause of death of around 474000 women, with 95% of these mortalities occurring in low- and middle-income countries. Meanwhile, according to the report issued by Iran's cancer registration national Center, in 20909, its prevalence was around 2.19 cases per 100,000, standing 11th among all cancers of Iranian women [14-16].

Most cases of cervical cancer results from infection with HPV as the most common sexually transmitted infection worldwide. Regular screening if accompanied by treatment in the early stages alongside vaccination against human papilloma virus (HPV) can be prevented [17-19]. HPV is one of the most common sexually transmitted infections, which is the main cause of incidence of infection attributed cancer cases worldwide [20]. HPV is a small double-stranded DNA virus which infects the patient. Different types of HPV are classified according to genomic structure as well as the propensity to the human epithelial tissue [21].

The coverage of HPV vaccination is also affected by different factors, which is lower in developing and less-developed countries [19]. The aggressive cervical cancer because of having a long period of no invasion, availability of suitable screening programs, and effective treatment of the initial lesions has been known as a preventable cancer [22].

Methodology

The present study was done to investigate the relationship between the frequency of different types of HR-HPV in patients suffering from high-grade cervical intraepithelial neoplasia (CIN) and the demographic characteristics of patients.

In this descriptive analytical study, with the ethics code of IR.SBMU.RETEC.REC.1400.1196, 302 patients with female gender were included.

In this study, the sampling method was census whereby the women referring to the governmental gynecology clinics because of

existence of genital lesions were included. The inclusion criteria were informed consent for participation in the study, presence of the risk factors confirmed for cervical neoplasia, some evidence suggesting abnormal examination, as well as abnormal Pap smear test result. The exclusion criteria included having other diseases that would influence the conditions of the study as well as lack of patient consent to continue their participation (at any time of conducting the research).

The instrument utilized in the research included two sections of the demographic characteristics form and the patient clinical examination (Pap smear, HPV type and colposcopy, test, etc.). The mentioned form included questions about age, education, marital status, employment status, type of method of contraception, number of sexual partners, history of taking corticosteroid drugs, number of pregnancies and methods of delivery, history of tobacco or cigarette smoking, history of STDs in the spouse, immunodeficiency, etc.

The biopsy from lesions was performed by a gynecologist under sterilized conditions according to the guidelines available in gynecology and obstetrics reference books. Next, the taken specimens were sent to the laboratory and their results were investigated. After collection, the data were introduced into SPSS 16, and analyzed through descriptive as well as analytical statistical methods.

Results

Out of 302 patients examined, the mean (standard deviation) of the patients' age was 34.12 (7.72) years. Regarding education, 25 (8.3%), 71 (23.5%), 97 (32.1%), 101 (33.4%), and 6 (2%) had below diploma, diploma, between diploma and bachelors, bachelors and Masters, and PhD, respectively. Regarding Gravid, 63 (20.9%) had grade 1, 50 (16.6%) had grade 2, and 25 (8.3%) had grade 3 (Tables 1 and 2).

TABLE 1 Status of variables based on HPV1 result 66

	All CIN (n=302)	colpo1 result CIN1	colpo1 result CIN2	colpo1 result CIN3	colpo1 result CIN4	colpo1 result CIN23
HPV types						
HPV1result16		25	6	8	2	4
HPV1result18		2	0	0	1	0
HPV1result31		2	1	1	0	0
HPV1result33		1	1	0	0	0
HPV1result35		1	0	0	0	0
HPV1result39		2	0	1	0	0
HPV1result45		1	0	0	0	0
HPV1result51		3	0	1	0	0
HPV1result52		4	0	0	0	0
HPV1result56		0	1	0	0	0
HPV1result58		1	0	0	0	0
HPV1result59		2	0	0	0	0
HPV1result66		1	0	0	0	0
HPV1result1618HI		1	1	0	0	0
HPV1result1618LOW		1	0	0	0	0
HPV1result1618HILOW		1	1	0	0	0
HPV1result68		1	0	0	0	0
HPV1resultOTHER		23	7	7	0	0
HPV1resultHIOOTHER		22	2	3	0	0
HPV1resultNEG		3	0	0	0	1
HPV1resultHIRISK		15	4	3	0	1
HPV1resultLowRisk		11	0	0	2	0
HPV1result16LowHiRisk		4	2	0	0	0
HPV1result16HiRisk		13	4	1	2	1
HPV1result18LowHiRisk		0	3	0	0	0
HPV1result18HiRisk		3	0	0	0	0
HPV1result16LOW		3	3	1	0	1
HPV1result18Low		2	1	0	0	0
HPV1result1618		0	1	1	0	1

TABLE 2 Status of variables used in cancer

	-	Yes	No	None	Total
HPV types					
HPV1 result 16		51(16.9)	227(75.2)	23(7.6)	301(99.7)
HPV1 result 18		4(1.3)	274(90.7)	23(7.6)	301(99.7)
HPV1 result 31		5(1.7)	273(90.4)	23(7.6)	301(99.7)
HPV1 result 33		2(0.7)	276(91.4)	23(7.6)	301(99.7)
HPV1 result 35		1(0.3)	277(91.7)	23(7.6)	301(99.7)
HPV1 result 39		3(0.1)	275(91.1)	23(7.6)	301(99.7)
HPV1 result 45		2(0.7)	276(91.4)	23(7.6)	301(99.7)
HPV1 result 51		5(1.7)	273(90.4)	23(7.6)	301(99.7)
HPV1 result 52		4(1.3)	274(90.7)	23(7.6)	301(99.7)
HPV1 result 56		1(0.3)	277(91.7)	23(7.6)	301(99.7)
HPV1 result 58		1(0.3)	277(91.7)	23(7.6)	301(99.7)
HPV1 result 59		2(0.7)	276(91.4)	23(7.6)	301(99.7)
HPV1 result 66		1(0.3)	277(91.7)	23(7.6)	301(99.7)
HPV1 result 1618 HI		2(0.7)	1(0.3)	275(91.1)	301(99.7)
HPV1 result 1618 LOW		1(0.3)	277(91.7)	23(7.6)	301(99.7)
HPV1 result 1618 HILOW		2(0.7)	276(91.4)	23(7.6)	301(99.7)
HPV1 result 68		2(0.7)	276(91.4)	23(7.6)	301(99.7)

HPV1 result OTHER	41(13.6)	237(78.5)	23(7.6)	301(99.7)
HPV1 result HI OTHER	31(10.3)	247(81.8)	23(7.6)	301(99.7)
HPV1 result NEG	8(2.6)	270(89.4)	23(7.6)	301(99.7)
HPV1 result HI RISK	24(7.9)	254(84.1)	23(7.6)	301(99.7)
HPV1 result Low Risk	14(4.6)	264(87.4)	23(7.6)	301(99.7)
HPV1 result 16 Low Hi Risk	6(2)	272(90.1)	23(7.6)	301(99.7)
HPV1 result 16 Hi Risk	23(7.6)	255(84.4)	23(7.6)	301(99.7)
HPV1 result 18 Low Hi Risk	4(1.3)	274(90.7)	23(7.6)	301(99.7)
HPV1 result 18 Hi Risk	3(1)	275(91.1)	23(7.6)	301(99.7)
HPV1 result 16 LOW	9(3)	269(89.1)	23(7.6)	301(99.7)
HPV1 result 18 Low	3(1)	275(91.1)	23(7.6)	301(99.7)
HPV1 result 1618	4(1.3)	274(90.7)	23(7.6)	301(99.7)

Conclusion

When a patient develops chronic diseases, all of their life dimensions are affected [6,23-25]. In different studies, the prevalence of cancer as well cervical cancer has been examined in Iran. In the study by Hajbagheri *et al.*, to examine the frequency of human papilloma virus as well as its genotypes in women suffering from genital lesions, 50 women living in Sanandaj, Iran were included. According to the findings, in 56% of the studied samples, HPV genome was identified; the frequency of the genotypes presents for genotype 6 was 32%, 18 was 12%, 16 was 6%, and 11 was 2% (2%) [26,27].

Cervical cancer is one of the most important groups of cancer in women, whose prevalence has been examined in studies conducted in Iran as well as in other countries. In the study by Kalliala *et al.*, investigating 27 eligible studies, the incidence of cervical cancer following CIN treatment in the year was 39 per 100,000. The relative risk was higher for women older than 50 years, and the relative risk of vaginal and rectal cancer was higher [28].

In the study by Loopik *et al.*, examining the cervical neoplasia and risk of cervical cancer, it was found that in case of developing cervical intraepithelial neoplasia (CIN) at grade 3, the risk of developing cervical cancer would double. Furthermore, at older ages, advanced age and women with recurrent CIN3 had higher chance of developing cervical cancer [29]. In the study by Damgaard *et al.*, examining 23-to-40-year-old women under screening, the results of histopathological

examinations of patients were inspected. According to the findings, out of 3623 patients with CIN2, the prevalence of any type of high-risk HPV was 87%, and HPV 16 was found as the most common genotype; HPV 16 in women of 30 years or younger was equal to 39.3%, while being 25.2% in women at age of 30 and above. Ultimately, the high prevalence of HPV 16 and the high-grade cytology in women was regarded a high-risk population [30].

Suggestions for further research

The results of this study can help clinical physicians to implement evidence-based practice.

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Authors' Contributions

All authors contributed to all stages of the article.

Conflict of Interest

The authors declare that they have no conflict of interest in this study.

Data Availability

All data produced and examined are incorporated in this article.

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