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HPV Prevalence and Risk of Premalignant and Malignant Lesions in Women with Asymptomatic Cervical Erosion: A Populatıon-Based Study

Servikal Erozyonu Olan Hastalarda HPV Prevalansı ve Premalign Malign Lezyon Riski: Populasyon Bazlı Çalışma

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Abstract

Objective: To evaluate the prevalence of Human papillomavirus (HPV) and the risk of cervical premalignant and malignant diseases in women with cervical erosion.

Materials and Methods: The results of 32649 women who screened for cervical cancer between January 2014 and December 2019 were retrospectively analyzed. We compared the results of HPV-positive and HPV-negative women with cervical erosion using the Kruskal-Wallis test and Chi-square test.

Results: Of the 32649 women who had cervical cancer screening, 2566 had cervical erosion, and 1585 (4.85%) had HPV positivity. HPV was found positive in 126 (4.91%) women with cervical erosion, and no significant difference in the incidence of HPV positivity in asymptomatic women with and without cervical erosion (p=0.112). As in the general population, in women with cervical erosions, HPV-16 and HPV-18 were found to be the most common. Abnormal cervical cytology was found in 217 (0.72%) women without cervical erosion and 31 (1.21%) women with cervical erosion, which was significantly higher than in women without cervical erosion (p=0.045). There was no significant difference between those with and without cervical erosion in terms of cervical intraepithelial neoplasia (CIN)-1, CIN-2, CIN-3, low-grade squamous intraepithelial lesions, high-grade squamous intraepithelial lesions, in situ cancer, and total abnormal cervical pathology results.

Conclusion: The incidence of HPV and the likelihood of cervical pathology in asymptomatic women with cervical erosion do not differ from the general population.

Keywords: Cervical Erosion, Ectropion, Cervical Cancer, HPV, CIN.

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Öz

Amaç: Servikal erozyonu olan hastalarda HPV'nin prevalansı ve servikal premalign ve malign hastalık riskini araştırmayı amaçladık.

Gereç ve Yöntemler: Ocak 2014-Ocak 2019 tarihleri arasında serviks kanseri taraması yapılan 32649 hastanın HPV testi ve smear sonuçları retrospektif olarak incelendi. Servikal erozyonu olan HPV pozitif ve HPV negatif olan kadınların sonuçları karşılaştırıldı. Gruplar arasındaki verilerin karşılaştırılmasında Kruskal-Wallis testi ve Ki-kare testi kullanıldı.

Bulgular: Serviks kanseri taraması yapılan 32649 kadının 2566'sında servikal erozyon, 1585'inde (%4,85) HPV pozitifliği vardı. Servikal erozyonu olan 126 (%4,91) kadında HPV pozitif olarak saptandı. Asemptomatik servikal erozyonu olan ve olmayan kadınlarda HPV pozitifliği görülme sıklığında anlamlı bir fark yoktu (p=0,112). Genel popülasyonda olduğu gibi servikal erozyonu olann kadınlarda yaygın olarak HPV 16 ve 18'in saptandığı görüldü. Servikal erozyonu olmayan kadınların 217'sinde (%0,72) ve servikal erozyonu olan kadınların 31'inde (%1,21) anormal servikal sitoloji saptandı ve bu oran servikal erozyonu olmayan kadınlara göre anlamlı derecede yüksekti (p=0,045). Cervical intraepitelial neopplasia (CIN)-1, CIN-2, CIN-3, low-grade squamous intraepithelial lesion, high-grade squamous intraepithelial lesion, İn situ kanser ve toplam anormal servikal sitoloji patoloji sonuçları karşılaştırıldığında servikal erozyonu olanlar ve olmayanlar arasında anlamlı bir fark yoktu.

Sonuç: Servikal erozyonu olan Asemptomatik kadınlarda HPV görülme sıklığı ve servikal patoloji görülme olasılığı genel popülasyondan farklı değildir.

Anahtar Kelimeler: Servikal Erozyon, Ektropiyon, Servikal Kanser, HPV, CIN

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Introduction

Cervical erosion and ectropion are caused by exposing the columnar epithelium of the endocervix to the vaginal environment. It is considered a physiological condition common in adolescents and pregnant women. (1). The prevalence of cervical erosion in the reproductive period varies between 15% and 50% (2). Cervical erosion is developed as a result of cervical and vaginal infection and may form a basis for cancer development (3). As a result of studies, trauma and inflammation have also been included in the etiology of cervical erosion (4).

Cervical cancer is the fourth most common cancer affecting women in the world, despite the high potential for detecting and treating it at an early stage. (5). Therefore, interpretation of cervical smear results, early diagnosis, and treatment of precancerous lesions are essential in preventing cervical cancer. Macroscopically, it is difficult to distinguish between cervical intraepithelial neoplasia and cervical ectropion (6). Cervical erosion is associated with approximately 17% of low-grade squamous intraepithelial lesions (L-SIL) (7).

Human papilloma virüs (HPV) is the most common sexually transmitted disease in cervical cancer etiology. Since HPV is an unenveloped, disinfectant-resistant virus, it can replicate in health centers and transmitted directly from the hospital, regardless of sexual intercourse. (8). Transmission routes of HPV could be sexually, horizontally, and vertically. The most common HPV genotypes that are known worldwide are 16 and 18, which are responsible for 70% of cervical cancer. Oncogenic types 31, 33, 35, 52, 58, and other HPV genotypes are seen less frequently (9,10).

This study aims to reveal the incidence of HPV in asymptomatic patients with cervical erosion/ectropion and to show whether there is an increased risk of cervical premalignant and malignant diseases in the general population.

Materials and Methods

This study is a retrospective study approved by the local ethics committee of Abant Izzet Baysal University (decision no; 2019/340). Cervical erosion and ectropion (N86) cases scanned from the hospital medical record system. Patients were classified using the International Classification of Diseases, 10th Revision (ICD-10). Among asymptomatic women who underwent HPV co-test and cytological examination for cervical cancer screening, patients diagnosed with cervical erosion (N 86) were determined by comparative screening in the medical database.

The HPV test and cervical smear results from 32,649 patients who underwent cervical cancer screening at the Cancer Early Diagnosis Screening and Education Center between January 2014 and January 2019 were examined with the permission of the health directorate. Medical records and diagnostic accuracy of 2566 patients diagnosed with N86 (cervical uteri erosion and ectropion) were reviewed.

In the study, two separate groups were formed: HPV-positive patients in the general asymptomatic population and HPV-positive patients who also had cervical erosion. Age, HPV test results, colposcopy results, and cytological and pathological examination results of the patients were recorded based on medical records. The liquid-based method was used to collect cervicovaginal cytology specimens. The specimens were simultaneously tested for the presence of HPV DNA and cervical cytology. Normal findings, infection, regeneration atypia, and insufficient material were considered normal cytology results. Atypical squamous cells of undetermined significance (ASCUS), atypical glandular cells (AGC), atypical squamous cells indistinguishable from the high-grade squamous intraepithelial lesion (ASC-H), low-grade squamous intraepithelial lesion (L-SIL) and high-grade squamous epithelial lesion (H-SIL) were accepted as abnormal cytology, and colposcopy was performed.

As colposcopy was performed by different doctors, biopsies were taken from 4 quadrants of the cervix in each patient who underwent colposcopy to ensure that no cervical pathology was missed.

Patients with HPV type 16 or 18 positive and HPV other positive and abnormal cytology underwent colposcopy. Cervical biopsy was taken for histopathological examination from those whose colposcopy results were abnormal or insufficient.

Nested polymerase chain reaction (PCR) and reverse dot blot genotyping were used to analyze HPV DNA.

Patients whose diagnosis was not confirmed by examination findings cases who did not undergo HPV or cytological-pathological examination were not included in our study.

Statistical Analysis

Social Sciences Statistical Package version 23.0 (SPSS Inc., USA) was used to analyze the data. The Kruskal-Wallis test and chi-square test were used for the comparison of HPV and cervical pathology rates between the groups. Results were expressed as mean ± standart deviation or number (%). P<0.05 was defined as statistically significant.

Results

Between 2014 and 2019, cervical cancer screening was carried out on 32,649 asymptomatic women, of whom 2,566 were found to have cervical erosion. The data of these women are shown in Table 1.

Table 1

Comparison Of Data on Women Screened for Cervical Cancer

	All screened population (n=32649)	Without cervical erosions (n=30083)	With cervical erosions (n= 2566)	P
HPV (+)	1585 (4.85 %)	1459 (4.84%)	126 (4.91%)	0.112
Age (years) (mean ± SD)	39.19 ± 6.37	39.24 ± 6.27	40.12 ± 6.89	0.956
Abnormal Cytology	248 (0.76%)	217 (0.72%)	31 (1.21%)	**0.045**
Colposcopy	626 (1.92%)	577 (1.92%)	49 (1.91%)	0.989
Abnormal Histopathology	381 (1.16%)	348 (1.15%)	33 (1.28%)	0.566
HPV 16	433(1.33%)	397 (1.32%)	36(1.40%)	0.634
HPV 18	104 (0.32%)	94 (0.31%)	10 (0.39%)	0.625

HPV: Human papillomavirus, SD: standart deviation

The mean age was 39.19 ± 6.37 years in the 32649 women screened. The mean age of the women without cervical erosion was 39.24 ± 6.27 years, and the mean age of the 2566 patients with cervical erosion was 40.12 ± 6.89 years. HPV was found to be positive in 1585 (4.85%) asymptomatic women screened. HPV was found to be positive in 126 (4.91%) women with cervical erosion. The frequency of HPV was similar in asymptomatic women with and without cervical erosion. (p=0.112) Of the total HPV-positive group, 27.31% were HPV type 16, and 6.56% were HPV type 18 positive. HPV 16 was most commonly detected in asymptomatic women who were screened. HPV 16 was detected in 433 (1.33%) women in the general population, and HPV 16 was detected in 36 (1.40%) women with cervical erosion. HPV 18 positivity was found in 104 (0.32%) women in the general population, and HPV 18 was detected in 10 (0.39%) women with cervical erosion.

Abnormal cervical cytology was found in 248 of all women screened (0.76%) and in 15.66% of all HPV-positive patients. In women with cervical erosion, abnormal cervical cytology was found in 31 women

(1.21%) in 24.6% of HPV-positive women and was significantly higher than in women without cervical erosion (p=0.04). A total of 626 women (1.92), including women with HPV positive + abnormal cytology results and women with HPV 16 or HPV 18 positivity (even without abnormal cytology results), underwent colposcopy. Among those who underwent colposcopy, 41 women (1.91%) had cervical erosions.

Of the women who underwent colposcopy, 381 (60.86%) had abnormal histopathology, whereas 33 (67.34%) of the patients with cervical erosion had abnormal histopathology. The results of the histopathological examination of the patients who underwent a biopsy after colposcopy are shown in Table 2. Histopathological examination revealed cervical intraepithelial neoplasia 1 (CIN-1) in 91 (6.23%) of HPV-positive women without cervical erosion. CIN-1 was found in 9 (7.14%) of 126 HPV-positive patients with cervical erosion. (p=0.067) CIN2, CIN3, L-SIL, H-SIL, in situ carcinoma, and all cervical pathological abnormalities were not significantly different between those with and without cervical erosions. (p values= 0.101, 0.913, 0.729, 0.895, 0.976, 0.056; respectively).

Table 2

Distribution Of Pathological Results Of All HPV Positive Patients-HPV Positive Patients With Cervical Erosion

Findings	**HPV(+) with cervical erosion n=126 n (%)**	**HPV(+) without cervical erosion n=1459 n (%)**	**P**
CIN-I	9 (7.14%)	91 (6.23%)	0.067
LSIL	12 (9.52%)	133 (9.11%)	0.101
CIN-II	6 (4.76%)	71 (4.86%)	0.913
CIN-III	2 (1.58%)	22 (1.51%)	0.729
HSIL	5 (3.96%)	53 (3.63%)	0.895
Insitu cervical cancer	1 (0.79%)	11 (0.75%)	0.976
Total abnormal pathology	35 (27.78%)	381 (26.11%)	0.056

HPV: Human papillomavirus, CIN: cervical intraepithelial neoplasia, LSIL: low-grade squamous intraepithelial lesion, HSIL: high-grade squamous epithelial lesion.

Abnormal cervical pathology results were found in 119 (7.50%) of the women who were HPV DNA positive, even though their cervical cytology results were normal.

Discussion

In our study, we investigated whether cervical erosion and ectropion increased the risk of HPV infection, cervical pre-cancer, and cervical cancer. The incidence of HPV was found to be 4.85% in asymptomatic patients screened for cervical cancer and 4.91% in patients with asymptomatic cervical erosion. Abnormal cervical cytology was found in 0.76% of all screened women and 15.66% of all HPV-positive patients. In women with cervical erosion, abnormal cervical cytology was found in 1.21% of all women with cervical erosions and in 24.6% of HPV-positive women with cervical erosions. CIN-1 was found in 6.23% of HPV DNA-positive females without cervical erosions and in 7.14% of 126 HPV DNA-positive females with cervical erosions. Although the rates of abnormal cytology and CIN-1 are slightly higher in asymptomatic women with cervical erosion, the incidence of HPV and the likelihood of abnormal cervical pathology are not different from the general population.

Patil et al. (7) examined 120 cervical erosion patients colposcopically. They reported that 55.8% of these patients had normal colposcopic findings. As a result of the biopsies performed in 50 patients with abnormal colposcopy findings, they detected CIN-1 in 48%, CIN-II in 24%, CIN-III in 12%, and cervical cancer in 4%. Sarkar et al. (11) examined 100 patients with cervical ectopia colposcopically. They reported that they detected H-SIL in 5 (5%) cases and L-SIL in 14 (14%) patients in the biopsies taken from 46 patients with abnormal colposcopy results. Bangal et al. (12) reported in their study that out of 100 patients with cervical erosion. They found that 30% of patients had abnormal colposcopic findings, 11 (11%) of patients with abnormal colposcopy findings had CIN-I, 3 (3%) patients had CIN-II, and 4 (4%) patients had CIN-III. They reported that they detected cervical cancer in 2 patients (2%). Similar abnormal colposcopy rates were found in our study. Still, since our analysis was performed on a larger patient population and was on patients with asymptomatic cervical erosion, it was thought that our cervical premalignant lesion rates might have been lower. Monroy et al. (13) investigated HPV DNA typing in 141 women with cervical erosion. They found HPV-16 HPV-18 mucosal IgA antibodies in cervical mucus reported that the prevalence of HPV in patients with cervical erosion was 73.7% (53.9% was HPV 18), and high-risk HPV types were 2.2 times more common in patients with cervical erosion than in patients with normal cervix. We thought that the high prevalence of HPV in this study may be related to the high incidence of HPV in the place where the study was conducted or because the patients included in the study consisted of patients with abnormal findings referred for colposcopy. However, unlike other studies, there is no significant difference in our study in terms of high HPV prevalence and cervical premalignant / malignant disease risk. In our study, HPV positivity was 4.91% in patients with cervical erosion, and HPV type 16 was found to be the most common, with 28.57% among high-risk types. Bayram et al.(14) reported that 20.2% of patients with cervical erosion had positive HPV DNA, and it was significantly more common than HPV positivity (12.8%) in patients with normal cervix. They detected HPV type 18 (32.9%) positivity most frequently. Castle et al. (15) reported in their study that they examined the prevalence of HPV in 9175 patients. They reported that 945 patients with cervical ectopia showed higher HPV positivity as the age and degree of ectopia increased, and HPV type 16 positivity was detected most frequently, similar to our study.

In their study, Cetin et al. reported that abnormal cervical pathological results were observed in approximately 9-10% of HPV-positive patients, even if there was no abnormal cytology (16). Similar to this study, 7.50% of HPV-positive women without abnormal cervical cytology had abnormal cervical cytology in our study.

Strengths of our study include its large number of participants, its non-hospital setting, its inclusion of healthy people with no gynecology problems, and its comparison with a general population in a similar location. Therefore, we think that it shows the incidence of HPV and cervical pathology more realistically in patients with cervical erosion.

The possible retrospective nature of the study, the reliance on medical records for the diagnosis of cervical erosions because it was a population-based study, and the fact that colposcopy was performed by different people are the limitations of our study.

Conclusion

Asymptomatic women with cervical erosions do not require a different approach to screening for cervical cancer than the general population.

Ethics Committee Approval: The study was approved by the Ethics Committee of Bolu Abant Izzet Baysal University (date: 07.01.2020 and approval number: 2019/340).

Informed Consent: Consent was not obtained as it was a retrospective study.

Conflict of Interest: Authors declared no conflict of interest.

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References

1. Goldacre MJ, Loudon N, Watt B, Grant G, Loudon JD, McPherson K, et al. Epidemiology and clinical significance of cervical erosion in women attending a family planning clinic. Br Med J 1978;1(6115):748-50.
2. Hua X, Zeng Y, Zhang R, Wang H, Diao J, Zhang P. Using platelet-rich plasma for the treatment of symptomatic cervical ectopy. Int J Gynaecol Obstet Off Organ Int Fed Gynaecol Obstet 2012;119(1):26-9.
3. Hwang LY, Ma Y, Shiboski SC, Farhat S, Jonte J, Moscicki AB. Active squamous metaplasia of the cervical epithelium is associated with subsequent acquisition of human papillomavirus 16 infections among healthy young women. J Infect Dis 2012;206(4):504-11.
4. Bright PL, Norris Turner A, Morrison CS, Wong EL, Kwok C, Yacobson I, et al. Hormonal contraception and area of cervical ectopy: a longitudinal assessment. Contraception 2011;84(5):512-9.
5. Bray F, Ferlay J, Soerjomataram I, Siegel RL, Torre LA, Jemal A. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J Clin 2018;68(6):394-424.
6. Casey PM, Long ME, Marnach ML. Abnormal cervical appearance: what to do, when to worry? Mayo Clin Proc 2011;86(2):147-50; quiz 151.
7. Patil P, Sharma P. Colposcopic evaluation of cervical erosion in symptomatic women. Int J Reprod Contracept Obstet Gynecol 2017;6(6):2207.
8. Ryndock EJ, Meyers C. A risk for non-sexual transmission of human papillomavirus? Expert Rev Anti Infect Ther 2014;12(10):1165-70.
9. Li N, Franceschi S, Howell-Jones R, Snijders PJF, Clifford GM. Human papillomavirus type distribution in 30,848 invasive cervical cancers worldwide: Variation by geographical region, histological type and year of publication. Int J Cancer 2011;128(4):927-35.
10. Crow JM. HPV: The global burden. Nature 2012;488(7413):S2-3.
11. Sarkar PK, Steele PRM. Routine colposcopy prior to treatment of cervical ectopy: Is it worthwhile? J Obstet Gynaecol 1996;16(2):96-7.
12. Bangal VB, Patil NA, Gavhane SP, Shinde KK. Colposcopy Guided Management of Cervical Erosions in Rural Population. Sch J Appl Med Sci 2014;2(1C):261-5.
13. Monroy OL, Aguilar C, Lizano M, Cruz-Talonia F, Cruz RM, Rocha-Zavaleta L. Prevalence of human papillomavirus genotypes, and mucosal IgA anti-viral responses in women with cervical ectopy. J Clin Virol 2010;47(1):43-8.
14. Bayram A, Erkilic S, Balat O, Eksi F, Ugur MG, Ozturk E, et al. Prevalence and genotype distribution of human papillomavirus in non-neoplastic cervical tissue lesion: cervical erosion. J Med Virol 2011;83(11):1997-2003.
15. Castle PE, Jeronimo J, Schiffman M, Herrero R, Rodríguez AC, Bratti MC, et al. Age-Related Changes of the Cervix Influence Human Papillomavirus Type Distribution. Cancer Res 2006;66(2):1218-24.
16. Serindag SR, Topcuoglu MA, Ekici MA, Cetin C. The role of performing a routine four-quadrant cervical biopsy in patients with negative colposcopic findings in increasing the identification rate of cervical intraepithelial neoplasms. Exp Biomed Res 2019;2(3):111-20.