

Comparison of Human Papilloma Virus (HPV) and Smear Scan Results, the Relationship of the Virus with Dysplasia and Its Distribution According to the Age of the Cases

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Abstract

Human papillomavirus (HPV) can cause dysplastic changes and cancer in many body areas, especially in the cervix (cervix). There are many scientific studies and contents that have been done on this subject and have proven this situation. However; How parallel are the detection of the virus and the smear scan results, and how relevant is the relationship of the virus with dysplasia to the age of the patients, does this have clinical meaning? We carried out a study to seek answers to these questions.

Keywords: Smear; HPV; Dysplasia

Introduction

Human papillomavirus; It is a DNA virus from the family Papillomaviridae. It can cause lesions in almost all parts of our body, especially in the savix, vulva, vagina, penis, anus, mouth, throat and tonsils. Most HPV infections resolve spontaneously within 2 years without causing any lesions or symptoms [1].

The fact that makes the subject important and the subject of our research is; almost all cervical cancers are associated with HPV. Especially HPV Types 16 and 18; According to WHO 2023 data, these accounts for about 70% of cancers. In studies conducted specifically for HPV Type 16; the relationship with dysplasia was found to be between 20-50%. However, the relationship between positivity in multiple HR-HPV tests and dysplasia is controversial [2, 3].

Performing a cervical smear and HPV test together is mainly aimed at the early diagnosis and treatment of possible cervical cancer. While this screening between the ages of 22-24 does not affect the incidence and treatment of cervical carcinoma, it is suggested that screening over the age of 40 reduces the incidence by 60% and over the age of 60 by 80%. As the number of studies demonstrating such results increased, the age of onset of cervical smear screening in the UK was taken from 20-24 years to over 25 years of age [4].

All right; In which age group is HPV positivity more and how much is the parallel of this with smear findings? This issue does not seem to have been the subject of much study. This study; has been made to address this issue [5].

Materials and Methods

We evaluated 2942 cases of cervicovaginal smears that were taken by the Obstetrics and Gynecology Clinic of our hospital and sent to our laboratory for examination. HPV was examined in 480 of our cases upon clinical necessity [6]. This rate of about 16% seems to be compatible with the rate of 13.6% in the studies on this subject. As it is known, HPV positivity is most compatible with HSIL (CIN-2) in cervicovaginal smears. In our study; we observed the association of HPV types with ASCUS, LSIL and HSIL and its change with age [7].

In our hospital; the age distribution of our patients who required HPV test in the cervicovaginal smear scans performed in the relevant clinic was reported as the youngest 21 and the highest 69.

Accordingly, the average age of this patient group is 45 years. The ratio and percentage of the HPV studied patient group according to the age of the patients are given [8] (Table1).

According to this table; the most requested HPV study by the relevant clinic was made among the 30- 40 age group. According to the table; With age progression, the desire for HPV testing by the clinic decreases. On the other hand; Of the 480 cases for which HPV test was requested, 180 had a positive test result. (%37.5) This rate is slightly higher than the rates (10-20%) determined in other studies on this subject. The reason for this is; it may be that our HPV test parameter is quite broad- spectrum [9].

In our study; 13,16,18,21,22,23,24,25,27,28,29,30,31,32,33,34,35,36 ,37,39,45,48,56,58,59,66,68 HPV types were evaluated. Lab; In the evaluation of HPV, BD Onclarity device and kits working with BD Viper LT System and RT PCR technique were used. The clinical performance of this test was found to be quite good in a study conducted by Wright et al. in 2014.

The sample report output showing the results of a patient who tested positive for HPV is shown [10] (Figure 1).

When Table-2 is evaluated; the highest positivity was observed for

Table 1: Age, distribution and percentage of patients who requested HPV testing.

AGE	HPV	RATE
20-30	144	30%
30-40	216	45%
40-50	72	15%
50-70	5	10%

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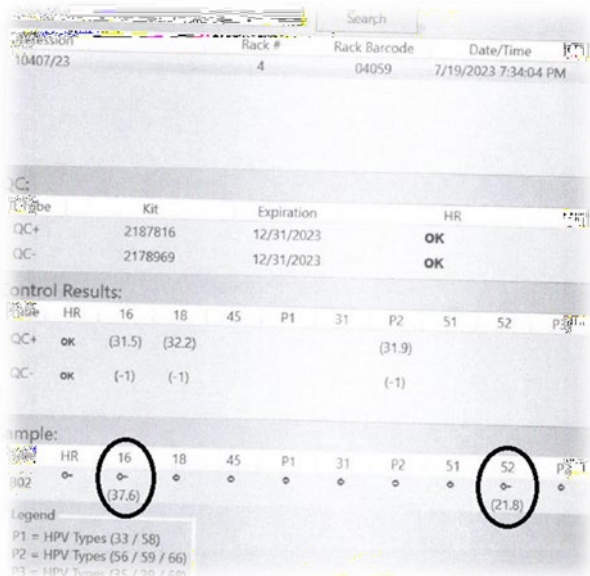


Figure 1: The sample report output showing the results of a patient who tested positive for HPV.

Table 2: Numerical distribution of Hpv positive cases.

HPV +	NUMBER	%
13-16	26	5,4
21-22-23-24	12	2,5
25-27-28	14	2,9
29-30-31-32	12	2,5
33-34-35-36	66	13,75
37-39-45-48	40	8,3
56-58-59	100	20,8
66-68	80	16,6

Table 3: HPV and positive numbers and percentages according to age distribution of cases.

AGE	HPV PREVALANCE	%
20-30	62	34
30-40	74	40
40-50	22	12
50-70	24	14

types 56, 58, 59 (20.8%) and 66.68 (16.6%). The least positivity is; types 21,22,23,24 (2.5%) and 29,30,31,32 (2.5%). Single HPV positivity was not detected in any of our cases. Therefore, the prevalence of multiple infections was taken into account. Our Study; the single prevalence is in part consistent with the work of Zhou et al., where 52 is the highest [11] (Table 2).

When we compare the frequency of HPV according to the age distribution of our cases, the results are observed in table-3. Accordingly; HPV positivity is most common in 74 cases (approximately 40%) and between the ages of 30-40. Another study result; after the age of 40, the rate of HPV positivity decreases in our cases. HPV prevalence according to the age range we determined in our study; there are some differences with the studies on this subject. This situation; inter-country ethnicity may be related to living and feeding conditions [12] (Table 3).

Finally, in our cases; we also evaluated the association of HPV positivity with dysplasia. Of our 180 cases with positive HPV test results, 46 also had dysplasia. (%25.5) Of these 46 dysplasia cases; 26

were evaluated as ASCUS, 14 as LSIL and 6 as HSIL. All of our cases were confirmed histopathologically by cervical punch biopsies [13].

Our results; It seems to be in line with the results of the study conducted by Dr. Wang et al. in China. In all of our cases with HPV positivity and HSIL coexistence; HPV positivity is constituted by types 16 and 18. This result; HSIL (especially CIN-2) coincides with the reality of type 16-18 association. The other 40 cases reported as ASCUS and LSIL consisted of HPV types 33-35-36 and 56-59-66 groups [14, 15].

In another result; although dysplasia is present, HPV positivity belongs to cases in which we do not detect. Of our 480 HPV tested cases, 21 (4.3%) had dysplasia without HPV positivity. These cases are; 20 were reported as ASCUS and 1 as LSIL. HPV Cervical smear images in which we detect diplasia together with it and histopathological cross-sectional images in which the result of one of them is confirmed are observed between [16] (Figures 2-7).

Discussion and Conclusion

As a final word; at the end of our study, we observed that HPV screening is especially important for the protection and vaccination of cervical cancer in a certain age group (30-40 age range). The relationship between HPV positivity and dysplasia; as in previous studies on this subject, there were significant parallels between type-16 and 18 and HSIL. The most frequently observed positive HPV typing result of 56, 58, and 59 is in parallel with previous literature studies. Dysplasia; in patients who we have detected but whose HPV test result is negative; we think that other etiological factors, especially smoking, may play a role as etiological factors.

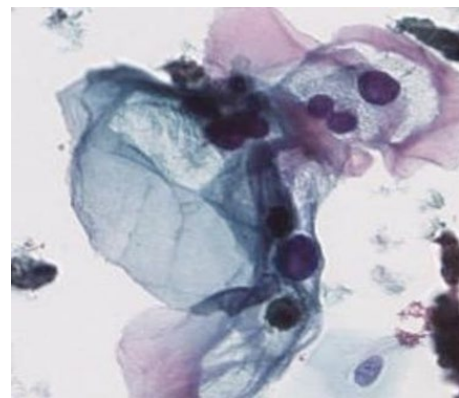


Figure 2: Cervical smear -LSIL (PAP x20, digital pathology).

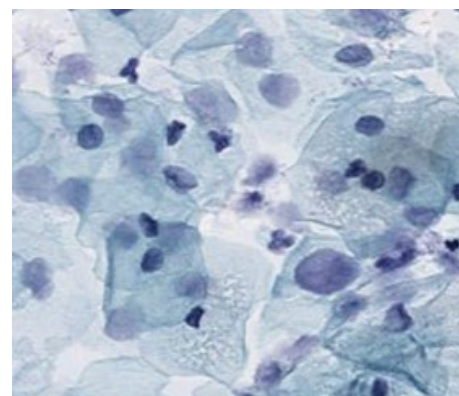


Figure 3: Cervical smear -LSIL (PAP x20, digital pathology): Another case.

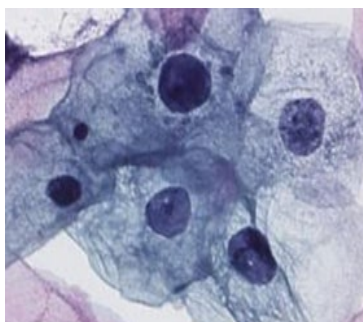


Figure 4: Cervical smear -LSIL (PAP x40, digital pathology): Another case.

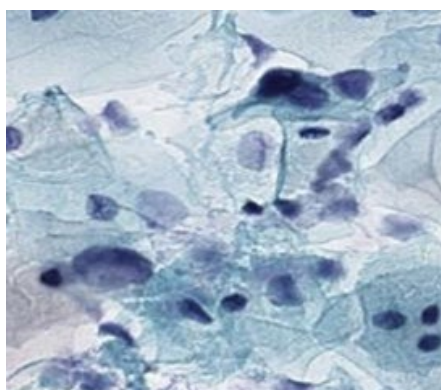


Figure 5: Cervical smear -HSIL (PAP x10, digital pathology): Another case.

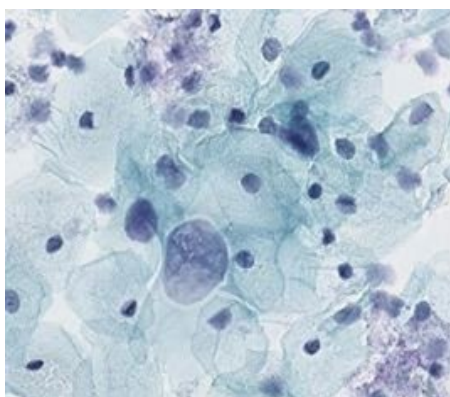


Figure 6: Cervical smear -HSIL (PAP x20, digital pathology) : Another case. In this case, He was HPV type 16 positive.

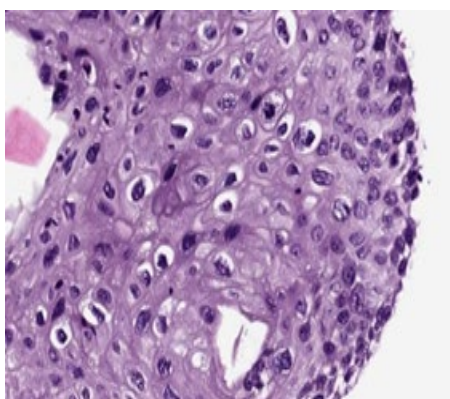


Figure 7: Cervical punch biopsy: histopathological view of our cytologically diagnosed patient with HSIL (H&E x40, digital pathology).

Compliance with ethical standards

Appropriate

Funding

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Conflict of Interest

None

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