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ORIGINAL ARTICLE

Examination of Colposcopy Results Performed at a Single Tertiary Level Center

Üçüncü Basamak Bir Merkezde Yapılan Kolposkopi Sonuçlarının İncelenmesi

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ABSTRACT

Background: Colposcopy is the evaluation of the lower genital system (cervix, vagina and vulva) in women. Cervical cytology is the screening test for malignancy of the lower genital system, especially cervical cancers. An abnormality may be found in approximately 10% of patients undergoing cervical cytology and further investigation is required in these patients. At this stage, colposcopy is performed.
Aim: The purpose of this study was to examine the results of colposcopy performed in Konya City Hospital.
Methods: In our clinic, which is a tertiary health center, 3% acetic acid is used during colposcopy examination and Shiller test is performed if necessary. Biopsies are performed in appropriate areas. In this study, colposcopy results performed over a 2-year period were examined retrospectively. During this review, 189 patient files were scanned. Demographic data, smear, human papillomavirus (HPV) and biopsy results were collected from the patients' files and analyzed.
Results: An abnormal pathology result was observed in 177 of the biopsies performed during the 189 colposcopy examinations. (Abnormal: atypical glandular cells, acanthosis, atypical squamous cells that cannot be classified as high-grade squamous intraepithelial lesion, high-grade squamous intraepithelial lesion, low-grade squamous intraepithelial lesion, squamous cell carcinoma). Other colposcopic biopsy results; atrophy, erosion and squamous metaplasia. Colposcopic biopsy results were normal in only 12 patients.
Conclusion: Risk-based management is recommended for the management of malignant or premalignant cervical lesions in women with or without HPV.

Keywords: Colposcopy, Human papillomavirus, Pap Smear, Risk Based Management

ÖZ

Arkaplan: Kolposkopi kadınlarda alt genital sistemin (serviks uteri, vajina ve vulva) değerlendirilmesidir. Servikal sitoloji, alt genital sistemdeki malignitelerin, özellikle de rahim ağzı kanserlerinin tarama testidir. Servikal sitoloji yapılan hastaların yaklaşık %10'unda anormallik bulunabilir ve bu hastalarda ileri tetkik yapılması gerekir. Bu aşamada kolposkopiye başvurulur.
Amaç: Bu çalışmanın amacı, üçüncü basamak bir hastane olan Konya Şehir Hastanesi'ndeki yapılan kolposkopi sonuçlarını incelemektir.
Metod: Üçüncü basamak bir sağlık merkezi olan kliniğimizde, kolposkopi incelemesi sırasında, %3 asetik asit kullanılmaktadır ve gerekli görülürse Shiller test yapılmaktadır. Uygun görülen yerlerden biyopsi yapılmaktadır. Bu çalışmada 2 yıllık süreçte yapılan kolposkopi sonuçları retrospektif olarak incelendi. Bu inceleme ırasında 189 hasta dosyası tarandı. Hastaların dosyalarından, demografik veriler, smear, human papilloma virüsü (HPV) ve biyopsi sonuçları toplanarak analiz edildi.
Bulgular: Yapılmış olan 189 kolposkopi incelemesi sırasında yapılan biyopsilerden 177'sinde anormal bir patoloji sonucu izlendi. (Anormal: atipik glandüler hücreler, akantosiz, atipik skuamöz hücreler-yüksek dereceli skuamöz intraepitelyal lezyon olarak sıfıflandırılamayan, yüksek dereceli skuamöz intraepitelyal lezyon, düşük dereceli skuamöz intraepitelyal lezyon, skuamöz hücreli karsinom). Diğer kolposkopik biyopsi sonuçları; atrofi, erozyon ve skuamöz metaplazi. Sadece 12 hastadan yapılan kolposkopik biyopsi sonucu normal sonuçlandı.
Sonuç: HPV'li veya HPV'siz kadınlarda malign veya premalign servikal lezyonların tedavisinde risk bazlı yönetim önerilmektedir.

Anahtar Kelimeler: Kolposkopi, Human papilloma virüsü, Pap Smear, Risk Esaslı Yönetim

Introduction

Colposcopy is the evaluation of the female lower genital system (cervix, vagina and vulva) with the help of light and magnification. It was first applied by Hinselmann in 1925 (1). Although the main purpose of the colposcopy method is to use it in the evaluation of premalignant lesions of the cervix, it is also used in the presence of genital warts, lichen sclerosis and Human Papillomavirus (HPV) pathologies (2). Colposcopy is primarily a diagnostic method, but is also used as a routine screening method in some countries. Cervical cytology is the screening test for malignancy of the lower genital system, especially cervical cancers. An abnormality may be found in approximately 10% of patients undergoing cervical cytology and further investigation is required in these patients. At this stage, colposcopy is performed. After staining the cervix with acetic acid,

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the cervix is examined with colposcopy and a biopsy is taken from the areas with abnormal appearance (3, 4). Thus, the presence of cervical intraepithelial neoplasia (CIN), invasive cancer and glandular cells are determined by pathological examination of the samples taken. In addition, attention is paid to the normal anatomic location of the transformation zone (TZ) during colposcopy (5).Endocervical curettage (ECC) should be performed depending on whether the transformation zone can be seen or not. It has been recommended in some publications to routinely perform ECC in patients with HPV-16 positive tumors, even if colposcopy and cytology results are normal (6, 7). Another use of colposcopy is in the follow-up of these lesions in women with known premalignant cervical lesions.

With the colposcopy device, the cervix is enlarged 6-40 times and illuminated. Low and medium magnifications are used at first; the cervix and upper vagina are evaluated at low magnification. Magnifications of 20 times and above are used to examine vascular patterns (8). In addition, the vascular structures of the cervix are seen better with the green filter. If blood and mucus is covering the image area, it can be cleaned with a cotton swab. Even lesions that are considered to be benign (cervical polyp, wart, naboth cyst, etc.) should be noted.

Reporting the Colposcopy Result: The evaluation should be recorded immediately after the colposcopy examination is finished. The recommended colposcopy record should be as follows; 1) indication, 2) degree of cytological abnormality, 3) whether the examination is satisfactory (according to the entire squamocolumnar junction), 4) whether the lesion has a vaginal and/or endocervical continuation, 5) whether there is acetowhite epithelium (if any, it should be indicated clockwise and marked on the graph), 6) Schiller test positivity (yes/no), 7) degree of change, 8) colposcopic lesion impression, 9) recommended treatment (re-evaluation or treatment) (9).

The aim of this retrospective, cross-sectional study was to evaluate the results of colposcopy examinations performed in Konya City Hospital.

Materials and Methods

Approval for this study was obtained from the Local Ethics Committee (9.30.2022- 22/483) and all procedures complied with the provisions of the 1995 Declaration of Helsinki (Brazil as revised in 2013). This study is a retrospective cross-sectional study. No interventional procedures were performed on the patients for the study.

The number of samples calculated based on previous studies on a similar subject was determined as at least 154 (confidence interval 95% and margin of error 5%). Indications and pathology results of 189 colposcopy examinations performed at Gynecology and Obstetrics Clinic of Konya City Hospital, which is a tertiary center, were evaluated between 10 August 2020 and 26 August 2022. According to the power analysis, this number was sufficient for analysis. The patients included were females aged 25-69 years who underwent colposcopy in the defined period. The study exclusion criteria were age <25 years or > 69 years, no colposcopy examination, or cytology abnormalities that did not have an indication for colposcopy in liquid-based cytology results or results of colposcopy not performed in our hospital.

The study was planned to be retrospective and cross-sectional, and no extra invasive procedures were applied to the patients. The files of the patients who underwent colposcopy between the specified dates were scanned. Demographic data such as age, height, weight, and body mass index (BMI) of the patients were obtained from the patients' records. Liquid-based cytology results (HPV positivity and cytology) obtained before colposcopy were recorded. It was recorded whether or not the transformation zone was seen during colposcopy. After colposcopy, the pathology results of cervical biopsies taken with colposcopy and ECC, if performed, were learned from the file records. Based on these pathology results, whether further treatment was applied, if so, which treatment was applied, and whether material was sent to the pathology laboratory during this treatment, the results were scanned from the files and recorded.

Performing the colposcopy: A cotton swab impregnated with 3% and 5% acetic acid is placed on the cervix and expected to contact the cervix for 10 seconds, then the cervix is examined with colposcopy. The lesions seen are described and recorded clockwise. If the patient permits and conditions are suitable, the lesions are photographed. The Schiller test is applied using Lugol's solution with a content of 1% iodine, 2% potassium iodide and 97% distilled water to better identify the atypical epithelium with little or no glycogen. A positive Schiller test indicates that there are areas that do not retain iodine. In our clinic, 3% acetic acid is used for colposcopy. If deemed necessary during colposcopy, the Schiller test is performed and biopsies are taken from the necessary areas (10).

Statistical method: Data obtained in the study were analyzed statistically using SPSS version 28.0 software. Descriptive statistics were stated as mean, standard deviation, median, minimum and maximum values, or number (n) and percentage (%). The conformity of data to normal distribution was assessed with the Kolmogorov-Smirnov test. The Mann-Whitney U-test was used in the analysis of quantitative independent data. The Chi-square test was used in the analysis of qualitative independent data, and the Fischer test was used when the chi-square test conditions were not met. A value of $p<0.05$ was accepted as statistically significant.

Results

The clinical features of the patients, smear, colposcopy and pathology results are summarized in Table 1. The average age of patients who underwent colposcopy was 43.3. Of the 189 patients who underwent

Table 1: Smear, HPV and Colposcopy Information

		Min-Max	Median	Mean±sd/n-%
Age (years)		25.0 - 69.0	43.0	43.3 ± 9.5
Smear Result	(-) Normal			104 55.0%
	(+) Abnormal			85 45.0%
AGC				2 1.1%
ASCH				2 1.1%
ASCUS				40 21.2%
HSIL				3 1.6%
LSIL				35 18.5%
NOS				1 0.5%
Recurrent HPV				1 0.5%
Unsatisfactory				3 1.6%
HPV	(-)			36 19.0%
	(+)			153 81.0%
Colposcopy Result	(-) Normal			12 6.3%
	(+) Abnormal			177 93.7%
AGC				1 0.5%
Acanthosis				16 8.5%
ASCH				1 0.5%
Atrophic				1 0.5%
Erosion				3 1.6%
HSIL				18 9.5%
HSIL + LSIL				4 2.1%
Chronic Cervicitis				70 37.0%
LSIL				52 27.5%
SCC				3 1.6%
Squamous Metaplasia				8 4.2%

AGC; atypical glandular cells, ASCH; atypical squamous cells-cannot exclude high-grade squamous intraepithelial lesion, ASCUS; atypical squamous cells of udetermined significance, HSIL; high-grade squamous intraepithelial lesion, LSIL; low-grade squamous intraepithelial lesion, NOS; not otherwise specified, HPV; human Papillomavirus

Table 2: ECC and Surgery Information

		n	%
TZ	(-) not seen	115	60.8%
	(+) seen	74	39.2%
ECC	(-) not done	58	30.7%
	(+) done	131	69.3%
Non-existent		58	30.7%
AGC		1	0.5%
Benign		111	58.7%
LSIL		2	1.1%
Polyp		14	7.4%
SCC		2	1.1%
Squamous Metaplasia		1	0.5%
Surgery	(-)	175	92.6%
	(+)	14	7.4%
Hysterectomy		4	28.6%
Conization /LEEP		10	71.4%
CT		1	7.1%
Surgery Pathology			
Benign		5	35.7%
HSIL		4	28.6%
LSIL		2	14.3%
SCC		3	21.4%

TZ; transformation zone, ECC; endocervical curettage, AGC; atypical glandular cells, LSIL; low-grade squamous intraepithelial lesion, SCC; squamous cell carcinoma, LEEP; Loop Electrosurgical Excision Procedure, *CT; chemotherapy, HSIL; high-grade squamous intraepithelial lesion*

Table 3: Comparison of the Colposcopy Results of the HPV Groups

		HPV (-)			HPV (+)			p	
		Mean±sd/n-%		Median	Mean±sd/n-%		Median		
Age (years)		45.1 ±	10.6	45.5	42.8 ±	9.2	42.0	0.294	m
Smear Result	(-)	13	36.1%		91	59.5%		0.011	X^2
	(+)	23	63.9%		62	40.5%			
Abnormal Colposcopy Result	(-)	0	0.0%		12	7.8%		0.097	X^2
	(+)	36	100.0%		141	92.2%			
TZ	(-)	23	63.9%		92	60.1%		0.678	X^2
	(+)	13	36.1%		61	39.9%			
ECC	(-)	11	30.6%		47	30.7%		0.985	X^2
	(+)	25	69.4%		106	69.3%			
Surgery	(-)	34	94.4%		141	92.2%		0.637	X^2
	(+)	2	5.6%		12	7.8%			

[m] Mann-Whitney U-test / [X^2] Chi-square test (Fischer test)

HPV; Human Papillomavirus, TZ; transformation zone, ECC; endocervical curettage

Table 4: Comparison of the Colposcopy Groups

		Colposcopy (-)				Colposcopy (+)				p	
		Mean±sd/n-%			Median	Mean±sd/n-%			Median		
Age (years)		41.2	±	12.3	39.0	43.4	±	9.3	43.0	0.347	m
Smear Result	(-)	5		13.9%		99		64.7%		0.511	X^2
	(+)	6		16.7%		79		51.6%			
HPV	(-)	0		0.0%		36		20.2%		0.097	X^2
	(+)	11		100.0%		142		79.8%			
TZ	(-)	6		54.5%		109		61.2%		0.659	X^2
	(+)	5		45.5%		69		38.8%			
ECC	(-)	3		27.3%		55		30.9%		0.800	X^2
	(+)	8		72.7%		123		69.1%			
Surgery	(-)	11		100.0%		164		92.1%		1.000	X^2
	(+)	0		0.0%		14		7.9%			

[m] Mann-Whitney U-test / [X^2] Chi-square test (Fischer test)

HPV; Human Papillomavirus , TZ; transformation zone, ECC; endocervical curettage

HPV; *Human Papillomavirus*

colposcopy, 85 had abnormal smear results (abnormal result; any pathological consequences or unsatisfactory). HPV positivity was detected in 153 of all colposcopy results. Abnormal pathology results were detected in 177 of the colposcopy results. (Table 1).

During the colposcopy performed on 189 patients, it was found that the TZ of 115 patients could not be evaluated completely or partially. ECC was performed in 131 of 189 patients. The results were determined as benign in 111 patients, and AGC was determined in 1, L-SIL in 2, polyp in 14, squamous metaplasia in 1, and SCC in 2 patients. Surgery was applied to 14 of these patients; 10 patients underwent conization or LEEP (Loop Electrosurgical Excision Procedure), and 4 patients underwent hysterectomy (3 due to SCC and 1 patient without cervical lesion, 1 hysterectomy due to myoma uteri). One patient had received chemotherapy before surgery for SCC. Of the patients who underwent surgery, the pathology reports showed 3 SCC, 4 H-SIL, 2 L-SIL and 5 benign results. (Table 2).

The age of the patients did not differ significantly ($p>0.05$) between HPV(-) and HPV (+) groups. The rate of positive smear result in the HPV(+) group was significantly lower than in the HVP(-) group ($p<0.05$). (Table 3) (Figure 1). Abnormal colposcopy result, TZ, ECC rate, surgery rate showed no significant difference between the HPV(-) and HPV (+) groups ($p>0.05$). (Table 3).

The patients were divided into two groups as those with and without any pathology in colposcopy. The age of the patients did not differ significantly ($p>0.05$) between the groups. (Table 4). There was no significant difference between the groups in respect of abnormality in the smear result, TZ and ECC rate ($p>0.05$). (Table 4).

Discussion

Cervical cancer is one of the most frequently diagnosed gynecological malignancies in developing countries (8). HPV is an important risk factor for cervical cancer (11, 12). Risk-based management is recommended for the management of malignant or premalignant cervical lesions in women with or without HPV, and colposcopy has an important role in this management (13, 14).

The majority of smear results were reported as normal. ASCUS and LSIL were the most common abnormal smear results. 81% of all patients who underwent colposcopy were positive for any HPV type. Chronic cervicitis and LSIL were most frequently detected in colposcopy results.

In a study conducted in Brazil in which smear results were examined, the rate of abnormal findings was found as 8.9% (15). In a study by Sahin et al., atypical squamous cells of udetermined significance (ASCUS) were determined at the rate of 33.2%, atypical squamous cells-cannot exclude high-grade squamous intraepithelial lesion (ASC-H) at 0.9%, high-grade squamous intraepithelial lesion (H-SIL) at 3.7%, and low-grade squamous intraepithelial lesion (L-SIL) at 10.7% (16). In the current study, the smear results before colposcopy were abnormal in 45% and HPV type positivity was determined in 81% of the patients. The abnormal smear results were ASCUS in 21.2%, ASC-H in 1.1%, L-SIL in 18.5%, H-SIL in 1.6%, and atypical glandular cells (AGC) were normal in 1.1% and 51%. In the same study by Sahin et al., the results of colposcopy were reported as L-SIL in 21%, H-SIL in 7%, and carcinoma in 0.5% (16). The current study colposcopy results were AGC 0.5%, ASC-H 0.5%, L-SIL 27.5%, H-SIL 9.5%, L-SIL+H-SIL 2.1%, chronic cervicitis 37%, SCC 1.6% and squamous metaplasia in 4.2%. The results were normal in 6.3%.

The transformation zone (TZ) was observed in 39.2% of the patients during colposcopy, but not in 60.8%. Endocervical curettage (ECC) was performed in 69.3% of the patients. The pathology results were reported as normal in 30.7%, 0.5% AGC, 1.1% L-SIL, 1.1% SCC, 7.4% polyps, 0.5% squamous metaplasia and 58.7% benign findings. These findings of the rates of ECC during colposcopy and the results reported as benign are

consistent with the study by Wang et al. (17). According to the colposcopy results in the current study, 1 patient received chemotherapy, and 10 patients underwent conization/LEEP (Loop Electrosurgical Excision Procedure). Hysterectomy was performed in 4 patients. All these surgeries were performed in accordance with risk-based management (13, 14, 18).

HPV positivity is a known important risk factor for cervical lesions. Additionally, it is reported that premalignant and malignant diseases are more common in women with HPV positive (11, 19, 20). HPV is held responsible not only for cervical cancers, but also for the formation of vulvar, vaginal, penile and anal cancers (21). In fact, according to the study by Peres et al., HPV also involves in the development of oral and pharynx cancers (22). In the current study, abnormal Pap smear findings were found more common in HPV-positive women ($p<0.05$). However, no significant correlation was detected between HPV positivity and abnormal colposcopy and ECC findings ($p>0.05$). This was attributed to the fact that colposcopy is performed according to abnormal smear findings, so consequently abnormal colposcopy and ECC findings are found at a high rate.

There were some limitations of this study. Although the standard cervical cancer screening test used in Konya City Hospital is performed as a co-test (Pap smear and HPV), this is not standard nationwide and some hospitals use Pap smears only for cervical cancer screening. Therefore, the results in our hospital cannot be generalized to the whole country. In addition, all the women included in this study had a prior abnormal co-test result and thus formed a selected subgroup of women at high risk for underlying premalignant lesions. Another limitation was the relatively low number of patients included, which resulted in very few patients in some combinations of test results, while others had a high proportion of high-grade lesions. However, the rates observed in groups of more than 10 women were seen consistent with rates in previous studies (23, 24).

Conclusion

Cervical cancer is one of the most common gynecological malignancies and can be screened in the community. There are many cervical premalignant and malignant lesions. Management of common premalignant lesions is important in the course of malignancy. In conclusion, risk-based management is recommended for the management of malignant or premalignant cervical lesions in women with or without HPV. Colposcopy has an important place in this management.

Conflict of interest: The authors declare no conflict of interest.

Informed consent: Approval for this study was obtained from the Local Ethics Committee (9.30.2022 - 22/483) and all procedures complied with the provisions of the 1995 Declaration of Helsinki (Brazil as revised in 2013) and the procedures were according to the ethical standards of the responsible committee on human experimentation. Written informed consent was obtained from each patient who participated in the study

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