

Evaluation of Cervical Cytological Abnormalities In Correlation with Clinical Findings in Iraqi Patients

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Abstract

Objective: Many articles study the efficiency of pap smears in detecting cervical disease and precancerous lesions; however, in Iraq, only few researches study the clinic-pathological correlation in pap smear results. In this study, we will highlight the correlation of pap smears with the most important and frequent clinical data and findings on cervical examination. **Materials and Methods:** One hundred and twenty cases are collected from private clinics of gynecology in Al-Kut province during the interval (June 1, 2020, to February 28, 2021). Clinical history was obtained and pap smear test was examined by two pathologists. Data were analyzed using SPSS software program version 26. **Results:** There were significant statistical association between cytological abnormalities on pap smear test and age of the patient (P -value of 0.01), with low grade squamous intraepithelial lesion (LSIL) result showed the highest mean age of 46.91 as well as significant association with a number of live birth and a number of pregnancies with significant P value (<0.001 and <0.001) in the same order. Atypical squamous cells of undetermined significance were the most common cytological abnormality. **Conclusion:** Women should not delay their first screening pap test for more than 30 years of age since the mean age for LSIL (the most significant abnormality present in this study) was the age of 46.91 ± 10.75 . awareness about screening for cervical precancerous lesions should be increased especially among multiparous women and those more than 40 years of age.

Keywords: Cervical cancer screening, cervical precancerous lesions, pap smear

INTRODUCTION

A cervical smear is one of the most effective procedures in cancer prevention. It is an easy noninvasive method that can detect early dysplastic changes in cervical epithelium to prevent its progression,^[1] starting from the start of sexual intercourse and continuing at periodic intervals according to the Bethesda system of cervical smear and according to the result of previous pap smear. For women who enter postmenopause age, they can continue screening till the age of 65.^[2] According to world cancer statistics, more than eighty percent of cervical cancer occur in developing countries due to a lack of awareness and deficiency in programs to encourage women for screening.^[3] In general, the sensitivity of pap smears in the detection of high-grade squamous intraepithelial lesions is good reaching 70.80 and this sensitivity is increased when coupled with HPV detection tests.^[4]

In Iraq, patients have no schedule for regular screening programs. Gynecologists request pap smears for their patients only when they have signs of cervical diseases like frequent abnormal discharge, abnormal bleeding such as metrorrhagia, menorrhagia, postcoital bleeding, or when they notice cervical erosion or ulcer on examination for any reason.^[5,6] While in developed countries the mortality rate from cervical cancer was decreased by forty percent due to active cervical screening programs.^[7] Bethesda system provides uniformity in reporting pap smear and it is easy to be understood by gynecologists. Categories of Bethesda system includes negative for intraepithelial lesion

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Submission: 04-May-2023 **Accepted:** 04-Sep-2023 **Published:** 09-May-2024

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How to cite this article: Hassooni ZA, Al-Sabbagh WRM, Taher TMJ. Evaluation of cervical cytological abnormalities in correlation with clinical findings in Iraqi patients. Med J Babylon 2024;21:144-8.

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DOI:
10.4103/MJBL.MJBL_503_23

or malignancy (NILM) when normal or inflammatory smear, atypical squamous cells of undetermined significance (ASCUS), atypical glandular cells (AGC) whether cervical or endometrial, low grade squamous intraepithelial lesion (LSIL) and high grade squamous intraepithelial lesion (HSIL).^[8] Each of these categories has its own clinical decision on whether to repeat a pap smear or colposcopy. A percentage of low and medium-risk precancerous cervical lesions will regress over time and not all of them can progress into invasive carcinoma. The most important abnormal cytological changes are nuclear enlargement in relation to the cytoplasm (high N/C ratio), nuclear hyperchromasia, nuclear membrane irregularity, prominent nucleoli, and perinuclear halo like in koilocytotic cell changes in relation to HPV.^[9] The introduction of the HPV vaccine has reduced both morbidity and mortality from cervical cancer over the world.^[10,11]

MATERIALS AND METHODS

This cross-sectional study was achieved for the patients attendant the private clinics of gynecology in Al-Kut City during the interval (1st of June 2020 to the 28th of February 2021). A pre-tested questionnaire form was worked for each female.

Inclusion criteria

Married women, as well as those who are divorced or widowed, are included. Also, multipara, symptomatic patients like profuse discharge, postcoital bleeding, metrorrhagia, menorrhagia, and those with abnormal cervical examination.

Exclusion criteria

The study excluded the pregnant women only.

The obtained data included information on demographic and socioeconomic status as the patients' age, age at marriage, age at menarche, age at first live birth, gravidity, parity, and use of contraception. After obtaining patients' agreement, the clinical gynecological examination was done. Cervical smear was taken in two methods conventional and liquid-based and the slides stained by hematoxylin and eosin stain, examined under a microscope by two histopathologists. In this study, we consider any diagnosis apart from NILM as positive.

Statistical analysis

Data were analyzed using SPSS software program version 26. The quantitative variables were presented by means and standard deviations while qualitative data were presented by frequency and percentages. Fisher's exact test was used to assess the association between qualitative variables. One-way ANOVA test and the Kruskal-Wallis test were used to compare means between different groups. A *P* value equal to or less than 0.05 is considered significant. A pie chart was also used to graphically present data.

Ethical issues

The agreement of both the health institute and the patients was taken.

RESULTS

This study result depended on the analysis of data from 120 women attending private clinics of obstetrics and gynecology in Kut City, Wasit Province [Table 1].

Table 1: Characteristic features, gynecological and obstetric history of 120 female patients

Continuous variables	Minimum	Maximum	Mean	Standard deviation
Age of patients	21	67	40.53	10.25
Age at menarche	11	16	12.29	0.65
Age at the first marriage	12	42	20.61	5.92
Categorical variables			Frequency	Percentage
Socioeconomic status	Good		65	54.2
	Poor		55	45.8
History of OCP	No		67	55.8
	Yes		53	44.2
History of IUCD	No		89	74.2
	Yes		31	25.8
Number of pregnancies	≤4		50	41.7
	5–8		56	46.7
	9–12		12	10.0
	≥13		2	1.7
Number of abortions	≤2		108	90.0
	3–4		7	5.8
	≥5		5	4.2
Number of live births	≤4		59	49.2
	5–8		55	45.8
	≥9		6	5.0

The mean age and standard deviation of participant women were 40.53 ± 10.25 , whereas the mean age at menarche was 12.29 ± 0.65 . More than half, 65 (54.2%) of women were belonging to good socioeconomic status. Only 53/120 (44.2%) women used oral contraceptive pills (OCP) previously and nearly one quarter (25.8%) used intrauterine contraceptive devices (IUCD). Women mentioned in their obstetric history the number of pregnancies, number of live births, and number of abortions. The percentage of patients with a number of pregnancies (5–8) was 46.7% followed by 41.7% for those who were equal or less than 4 pregnancies. The majority (90%) of the sample had equal or less than 2 abortions in their lives while the highest percentage (49.2%) was for those with equal or less than 4 live births.

Table 2 shows the frequency distribution of results from clinical examinations. The majority of the patients 85/120 (70.83%) were represented with cervical erosion followed by 25/120 (20.83%) who had hyperemia. The remaining percentages were distributed between cervical polyps, cervical lesions like mass, hyperemia with bleeding on touch, postcoital bleeding, and normal cervix with vaginal discharge.

In Figure 1, the results of pap smear by liquid-based cytology method show that more than half of the patients

Table 2: Frequency distribution of cervical examination results among 120 female patients

Cervical examination	Frequency	Percentage
Erosion	85	70.8
Hyperemia	25	20.8
Cervical lesion-like mass	3	2.5
Cervical polyp	3	2.5
Hyperemia with bleeding on touch	2	1.7
Postcoital bleeding	1	0.8
Normal with vaginal discharge	1	0.8
Total	120	100

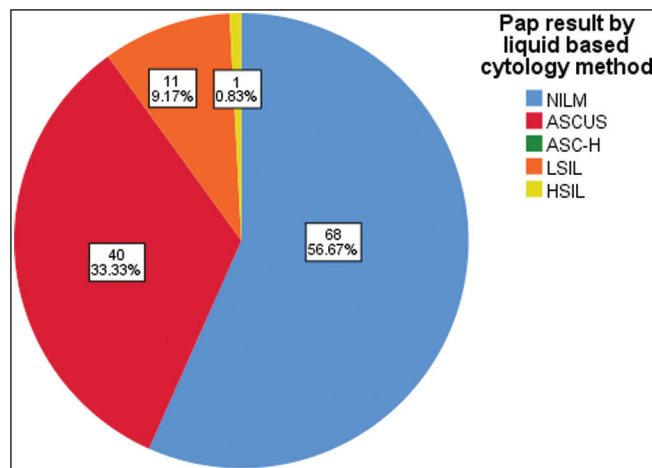


Figure 1: Pie chart of the pap smear results by liquid-based cytology method among 120 female patients

68 (56.67%) appear to have NILM followed by 40 (33.33%) with ASCUS. No patients had ASC-H.

The age of patients was statistically associated with their smear results with a P value of 0.01. Women with LSIL had the highest mean age of 46.91 ± 10.75 (CI: 39.24–46.16). The number of pregnancies and the number of live births were also with significant P values (<0.001 and <0.001) in the same order [Table 3].

There was no significant statistical association between pap smear results with socioeconomic status, history of using OCP, history of using IUCD, age at menarche, age at first marriage, and the number of abortions [Tables 3 and 4].

The clinical cervical examination was significantly associated with the result of the pap smear. The Fisher's exact test shows a P value = 0.01 in Table 5.

DISCUSSION

The worldwide incidence of cervical cancer is high among different countries; however, in Iraq, it is still low when compared with other common cancers in females, such as breast cancer or endometrial cancer. This may be related to social and religion-related issues with a very low incidence of multi-partner habit. However, women can get HPV infection from their legal partner who might get multiple sexual relationships while traveling worldwide. According to American Cancer Society, pap smear and HPV test remain the most important screening program to limit cervical cancer in women.^[12] In this study, the majority of the patients 85/120 (70.83%) were represented with cervical erosion followed by 25/120 (20.83%) who had hyperemia, and the most significant cytological finding was ASCUS followed by LSIL and both of them was significantly more in cervical erosion (75% and 5.5%, respectively) with a P -value of 0.01. from total number ASCUS was the most common (33.33%). Vaghela *et al.*^[13] reported that LSIL was the most common epithelial abnormality, found in 12.4% of their individuals, followed by HSIL in 5% of the cases. This was the same for Sachan *et al.*'s^[14] study in which LSIL represented 5.09% of the total individuals. A higher incidence of ASCUS in our research may be related to the high incidence of inflammatory-related changes with less awareness about symptoms of inflammation and seeking health services for prompt treatment.

The age of patients was statistically associated with their smear results with a P value of 0.01. Women with LSIL had the highest mean age of 46.91 ± 10.75 (CI: 39.24–46.16). In the study of Sachan *et al.*, the most significant abnormal cytology was detected in patients in the age group between 40 and 60 years (average age 49), LSIL and HSIL were present in 5.09% and 0.48% of the patients in this age group, respectively (2). Whereas Gupta

Table 3: Association between pap smear results with some patients' characteristics and demographic data

Variables			Pap result by liquid-based cytology method				P value (Fisher's exact test)
			NILM	ASCUS	LSIL	HSIL	
Socioeconomic status	Good	Count	38	22	5	0	0.742
		%	55.9	55	45.5	0	
	Poor	Count	30	18	6	1	
		%	44.1	45	54.5	100	
History of OCP	No	Count	39	23	4	1	0.450
		%	57.4	57.5	36.4	100	
	Yes	Count	29	17	7	0	
		%	42.6	42.5	63.6	0	
History of IUCD	No	Count	53	30	5	1	0.134
		%	77.9	75.0	45.5	100	
	Yes	Count	15	10	6	0	
		%	22.1	25	54.5	0	
Number of pregnancies	≤4	Count	39	10	1	0	<0.001
		%	57.4	25	9.1	0	
	5-8	Count	26	24	5	1	
		%	38.2	60	45.5	100	
	9-12	Count	2	5	5	0	
		%	2.9	12.5	45.5	0	
	≥13	Count	1	1	0	0	
		%	1.5	2.5	0	0	
Number of abortions	≤2	Count	63	36	8	1	0.147
		%	92.6	90	72.7	100	
	3-4	Count	4	1	2	0	
		%	5.9	2.5	18.2	0	
	≥5	Count	1	3	1	0	
		%	1.5	7.5	9.1	0	
	≤4	Count	44	14	1	0	<0.001
		%	64.7	35	9.1	0	
Number of live births	5-8	Count	23	23	8	1	
		%	33.8	57.5	72.7	100	
	≥9	Count	1	3	2	0	
		%	1.5	7.5	18.2	0	

Table 4: Mean differences between pap smear results according to age, age at menarche, and age of marriage

Variables		N	Mean	Standard deviation	95% confidence interval for mean		P value
					Lower bound	Upper bound	
The age	NILM	68	38.37	9.24	36.13	40.60	0.016*
	ASCUS	40	42.70	10.82	39.24	46.16	
	LSIL	11	46.91	10.75	39.68	54.14	
	HSIL	1	30.00	—	—	—	
Age at menarche	NILM	68	12.38	0.77	12.20	12.57	0.502**
	ASCUS	40	12.15	0.42	12.01	12.29	
	LSIL	11	12.27	0.46	11.96	12.59	
	HSIL	1	12.00	—	—	—	
Age of the first marriage	NILM	68	20.25	5.34	18.96	21.54	0.730**
	ASCUS	40	21.20	5.99	19.28	23.12	
	LSIL	11	20.73	9.14	14.58	26.87	
	HSIL	1	20.00	—	—	—	

*One-way ANOVA test

**Kruskal–Wallis test

Table 5: Association between pap smear results with the cervical examination

Cervical examination*	Pap result by liquid-based cytology method*			
	NILM	ASCUS	LSIL	HSIL
Erosion				
No.	50	30	5	0
%	73.5	75	45.5	0
Postcoital bleeding				
No.	1	0	0	0
%	1.5	0	0	0
Hyperemia with bleeding on touch				
No.	0	0	1	1
%	0	0	9.1	100
Hyperemia				
No.	14	8	3	0
%	20.6	20	27.3	0
Normal with vaginal discharge				
No.	1	0	0	0
%	1.5	0	0	0
Cervical lesion-like mass				
No.	0	1	2	0
%	0	2.5	18.2	0
Cervical polyp				
No.	2	1	0	0
%	2.9	2.5	0	0

*P-value according to Fisher's exact test = 0.010 (high significant)

NILM: negative for intraepithelial lesion or malignancy, ASCUS: atypical squamous cells of undetermined significance, LSIL: low-grade squamous intraepithelial lesion, HSIL: high-grade squamous intraepithelial lesion

et al.^[15] found that most of the abnormal cytology cases (LSIL: 40.37%) in their study were in the age group of 30–39 years.

There was a significant statistical association between a number of pregnancies and the cytological abnormalities (P value < 0.001), this was similar to the Sachan *et al.* study, in which most women with LSIL had three children or more.^[14] while no significant association was found regarding socioeconomic status, age at menarche, age at first marriage, IUCD or OCP.

CONCLUSION

Iraqi women had a lower incidence of significant cervical smear abnormalities than other countries. The majority of pap smear results in Iraqi patients was NILM. There is a significant correlation between significant pap smear results (mostly LSIL) and the patients' age and number of pregnancies. Since the development of cancer from

precursor cervical lesions required 5–10 years and the mean age for cervical abnormalities was 46.91 ± 10.75 years, so all women should not delay their first screening test for more than 30 years of age.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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