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Research Article

Abnormal Cervical Cytology in a Tertiary University Hospital

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Abstract

Introduction: Cervical cancer is the most common cause of preventable cancer-related deaths, cervical cancer has a long preinvasive phase (cervical dysplasia), the prevalence of cervical dysplasia varies according to the socioeconomic characteristics and geographic areas of the population studied. Low-grade lesions regress spontaneously in a significant number of patients, while high-grade lesions will progress to an invasive cancer if left untreated. Cervical cancer screening is an important component of the World Health Organization (WHO) strategy for combating cervical cancer. The incidence and prevalence of cervical cancer has reduced remarkably over the last three decades in developed countries where there are effective, well-coordinated screening programs, and treatment of cervical dysplasia, while in developing countries it has been increasing and has constituted major health problems among women where there are no well-coordinated and effective screening programs, also resources are very low and no insurance can cover this programs.

Results: 83% of patients was -ve intraepithelial neoplasia {37.7% was normal cytology and 45.3% was inflammatory}. 17% was +ve intraepithelial neoplasia (abnormal cytology), {11.1% ASCUS, 2.9% LSIL, 1.3% HSIL, 1.1% ASC-H, 0.3% AGS-NO, 0.3% AGS-Favor Neoplastic}. Prevalence of abnormal cervical cytology in age group less than 30 years was 8.4%, which is lower than prevalence in middle age group, which was 19.9%. Prevalence of abnormal cervical cytology in women with normal vaginal delivery was higher than those with caesarean delivery. 39.8% of our patients were passive and active smoker 61.2% of their pap smear was abnormal cytology.

78.9% of abnormal cytology was among patients from low socioeconomic class (rural areas). Abnormal cervical cytology in patients with high parity was 69%, which is higher than abnormality found in lower parity. 60.2% of abnormal cervical cytology was in patients who became sexually active before age of 20 years. Prevalence of abnormal cervical cytology was higher in patients with multiple sexual partners (56.5%) than patients with single sexual partner (13.3%).

Conclusions: We still have high prevalence of abnormal cervical cytology in our country, which need more screening. Prevalence of abnormal cervical cytology is high between smoker (active, passive). Prevalence of abnormal cervical cytology is high between patients with low socioeconomic class.

Keywords: Cervix; Cancer; Abnormal cervical cytology

Introduction

Cervical cancer is the most common cause of preventable cancer-related deaths, cervical cancer has a long preinvasive phase (cervical dysplasia), the prevalence of cervical dysplasia varies according to the socioeconomic characteristics and geographic areas of the population studied. Low-grade lesions regress spontaneously in a significant number of patients, while high-grade lesions will progress to an invasive cancer if left untreated. Cervical cancer screening is an important component of the World Health Organization (WHO) strategy for combating cervical cancer. The incidence and prevalence of cervical cancer has reduced remarkably over the last three decades in developed countries where there are effective, well-coordinated screening programs, and treatment of cervical dysplasia, while in developing countries it has been increasing and has constituted major health problems among women where there are no well-coordinated and effective screening programs, also resources are very low and no insurance can cover this programs [1-4].

The aim of work was to assess the prevalence of abnormal cervical cytology in Al Shatby Maternity University Hospital patients using pap smear.

Methods

A prospective study was conducted on 1000 woman who attended Al Shatby Maternity University Hospital clinics who are not screened

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before by pap test. All participants were fully counseled about the study and an informed consent obtained prior to participation in the study.

Inclusion criteria was. Married woman from 3 years or more 2. Woman age from 21 to age 65 years. Exclusion criteria: Previously known cervical cancer patient. 2. Virgin female. Woman with active bleeding.

After approval of the medical ethics committee and signing a written informed consent all selected case were subjected to inspection of cervix with the naked eye for detection of any visible lesions.

Cases participated in the study were subjected to Pap smear .The Pap smears were examined by staff of the Pathology Department, Faculty of Medicine, Alexandria University. Smears are taken with the prerequisites: tampons, birth-control foams, vaginal douching or vaginal creams were avoided for 2 to 3 days before the test. Sexual intercourse was avoided for 2 days before the test. Cytology results were interpreted and reported according to the Bethesda system classification 2014.

Data were fed to the computer and analyzed using IBM SPSS software package version 20.0. (Armonk, NY: IBM Corp) [5] Qualitative data were described using number and percent. The Kolmogorov-Smirnov test was used to verify the normality of distribution Quantitative data were described using range (minimum and maximum), mean, standard deviation and median. Significance of the obtained results was judged at the 5% level.

Results [Table 1-11]

According to Patient's age showed that 321 (32.1%) patients their age were <30 years, 480 (48%) patients their age ranged between 30 - <40 years, 154 (15.4%) patients their age ranged between 40 - <50 years, 27 (2.7%) patients their age ranged between 50 - <60 years and 18 (1.8%) patients their age were ≥60 years, in general patients age ranged between 20 - 63 years with mean±S.D. 34.18±7.825 years. According to patients residence showed that 303 (30.3%) patients were from rural and 697 (69.7%) patients were from urban. As regard to menopausal status 940 (94%) patients were premenopausal while 60 (6%) patients were postmenopausal. As regard of patients marital status 970 (97%) patients were married while 30 (3%) patients were not married at that time as 14 (47%) patients were divorced and 16 (53%) patients were widow. As regard to age of first Intercourse of patients were ranged between 15-30 years with mean±S.D. 22.981±3.528 years.

According to number of marriage of patients it was ranged between 1-3 husband with mean±S.D. 1.120±0.352. According to duration of marriage of patients it was ranged between 1-48 years with mean±S.D. 11.20±7.936 years. As regard to mode of previous deliveries showed that 432 (43.2%) patients had CS delivery, 449 (44.9%) patients had NVD, 77 (7.7%) patients had NVD then CS delivery and 42 (4.2%) patients had no previous deliveries. According to interval since last delivery was ranged between 1-25 years with mean±S.D. 4.49±4.590 years. As regard to patient's gravidity it was ranged between 0-11 time with mean±S.D. 2.90±1.833. As regard to patients parity it was ranged between 0-10 deliveries with mean±S.D. 2.62±1.460.

Table 1: Relation between age and result.

Age	Result of PAP Smear				P Value
	-ve neoplasia intraepithelial		+ve neoplasia intraepithelial		
	NO	%	No	%	
<30	294	35.4	27	16.1	0.000*
30 - <40	395	47.6	85	49.8	
40 - <50	110	13.7	41	24.4	
50 - <60	14	1.7	13	7.5	
≥60	14	1.7	4	2.2	
Total	830	100	170	100	

Relation between Patients age and Results of PAP Smear.

Table 2: Results of pap smear.

Result of PAP smear	No	%
-ve intraepithelial neoplasia	830	83
Normal	377	37.7
Inflammatory	453	45.3
+ve intraepithelial neoplasia	170	17
ASCUS	111	11.1
LSIL	29	2.9
HSIL	13	1.3
ASC-H	11	1.1
AGS-NO	3	0.3
AGS-Favour Neoplastic	3	0.3
Total	1000	100

Table 3: Relation between smoking and results.

Cigarette Smoking	Result of PAP Smear				P Value
	-ve intraepithelial neoplasia		+ve intraepithelial neoplasia		
	No	%	No	%	
No	536	64.6	66	39.1	0.000*
Passive	187	22.5	73	42.7	
Active	107	12.9	31	18.2	
Total	830	100	170	100	

Relation between patient's Cigarette Smoking and Result of PAP Smear.

According to cigarette smoking showed that 602 (60.2%) patients were no smoker, 260 (26%) patients were passive smoker and 138 (13.8%) patients were active smoker. As regard to OCP usage 360 (36%) patients were on ocp while 640 (64%) patients were non user. As regard to duration of OCP usage it was ranged between 1-16 years with mean±S.D. 3.01±2.733 years. As regard to IUD usage 216 (21.6%) patients were IUD user 784 (78.4%) patients were non user. As regard to condom usage 120 (12%) patients were condom user while 880 (88%) patients were non user. As regard to related gynecological symptoms there were 660 (66%) patients were normal, 286 (28.6%) patients had vaginitis, 53 (5.3%) patients had abnormal vaginal bleeding, and 1 (0.1%) patients had cervical bleeding on touch. As regard to cervical Finding there were 655 (65.5%) patients were normal, 345 (34.5%) patients were abnormal as (183 (18.3%) patients had cervical infection, 83 (8.3%) patients had Nabothian follicle, 28 (2.8%) patients had cervical polyp, 19 (1.9%) patients

Table 4: Local exam and results.

Cervical Finding	Result of PAP Smear				P Value
	-ve intraepithelial neoplasia		+ve intraepithelial neoplasia		
	No	%	No	%	
Normal	598	72	57	33.7	0.000*
Abnormal	232	28	113	66.3	
Infection	146	17.7	37	21.9	
Nabothian Follicle	65	7.8	18	10.4	
Polyp	15	1.8	13	7.9	
Bleed on touch	0	0	19	11.1	
Ectropion	6	0.7	12	6.8	
Ulcer	0	0	12	6.8	
Nodule	0	0	2	1.4	
Total	830	100	170	100	

Relation between patient's Cervical Finding and Result of PAP Smear.

Table 5: Residence and results.

Residence	Result of PAP Smear				P Value
	-ve intraepithelial neoplasia		+ve intraepithelial neoplasia		
	No	%	No	%	
Rural	169	20.4	134	78.9	0.000*
Urban	661	79.6	36	21.1	
Total	830	100	170	100	

Relation between patient's patients Residence and Result of PAP Smear.

Table 6: Relation between patient's related gynecological symptoms and Result of PAP Smear.

Related gynecological symptoms	Result of PAP Smear				P Value
	-ve intraepithelial neoplasia		+ve intraepithelial neoplasia		
	No	%	No	%	
Normal	583	70.3	77	45.2	0.000*
Vaginitis	226	27.2	60	35.1	
Abnormal vaginal bleeding	21	2.5	32	19	
Cervical bleeding on touch	0	0	1	0.7	
Total	830	100	170	100	

Table 7: Relation between IUD usage and Result of PAP Smear.

IUD User	Result of PAP Smear				P Value
	-ve intraepithelial neoplasia		+ve intraepithelial neoplasia		
	No	%	No	%	
Yes	198	23.86	18	10.59	
No	632	76.14	152	89.41	0.014*
Total	830	100	170	100	

had cervical bleeding on touch, 18 (1.8%) patients had ectropion, 12 (1.2%) patients had cervical ulcer and 2 (0.2%) patients had cervical nodule).

According to result of PAP smear there were 830 (83%) patients were negative intraepithelial neoplasia as (377 (37.7%) patients were normal smear and 453 (45.3%) patients were inflammatory smear)

Table 8: Relation between patient's Age of first intercourse and Result of PAP Smear.

Age of first intercourse	Result of PAP Smear				P Value
	-ve intraepithelial neoplasia		+ve intraepithelial neoplasia		
	No	%	No	%	
<20	333	40.1	102	60.2	0.387
20-30	461	55.5	57	33.3	
≥30	36	4.4	11	6.5	
Min. - Max.	15 - 30		15 - 30		0.553
Mean ±S.D.	22.918±3.424		23.143±3.785		

Table 9: Relation between patient's Mode of Previous Deliveries and Result of PAP Smear.

Mode of Previous Deliveries	Result of PAP Smear				P Value
	-ve intraepithelial neoplasia		+ve intraepithelial neoplasia		
	No	%	No	%	
CS	372	44.7	60	35.1	0.001*
NVD	359	43.3	90	53.1	
NVD then CS	61	7.4	16	9.7	
No	38	4.6	4	2.1	
Total	830	100	170	100	

while 170 (17%) patients were positive intraepithelial neoplasia as (111 (11.1%) patients were ASCUS, 29 (2.9%) patients were LSIL, 13 (1.3%)patients were HSIL, 11 (1.1%) patients were ASC-H, 2 (0.2%) patients were AGS-US, 2 (0.2%) patients were AGC, 1 (0.1%) patients were AGS-NO and 1 (0.1%) patient was AGS-Favor Neoplasia.

cording to relation between patient's age and result of PAP Smear there were negative intraepithelial neoplasia group were 294 (35.4%) patients their age were <30 years, 395 (47.6%) patients their age ranged between 30 <40 years, 113 (13.7%) patients their age ranged between 40 <50 years,14 (1.7%) patients their age ranged between 50 -<60 and 14 (1.7%) patients their age were ≥60 years while in positive intraepithelial neoplasia group 27 (16.1%) patients their age were <30 years, 85 (49.8%) patients their age ranged between 30 <40 years, 41 (24.4%) patients their age ranged between 40 <50 years, 13 (7.5%) patients their age ranged between 50 <60 years and 4 (2.2%) patients their age were ≥60 years. There was statistically significant difference between two groups where P=0.000 (P significant as P<0.05)

As regard to relation between patient's residence and result of PAP Smear there were negative intraepithelial neoplasia group (169 (20.4%) patients were from rural areas and661 (79.6%) patients were from urban areas) while in positive intraepithelial neoplasia group (134 (78.9%) patients were from rural areas and 36 (21.1%) patients were from urban areas). There was statistically significant difference between two groups where P=0.000 (P significant as P<0.05).

According to relation between patient's menopausal Status and Result of PAP Smear there were (negative intraepithelial neoplasia group (788 (95%) patients were premenopausal and 42 (5%) patients were postmenopausal) while in positive intraepithelial neoplasia group (152 (89.2%) patients were premenopausal and 18 (10.8%) patients were postmenopausal). There was statistically significant

Table 10: Relation between OCP usage and Result of PAP Smear.

OCP User	Result of PAP Smear				P Value
	-ve intraepithelial neoplasia		+ve intraepithelial neoplasia		
	No	%	No	%	
Yes	237	28.55	123	75.35	0.000*
No	593	71.45	47	27.65	
Total	830	100	170	100	

Table 11: Relation between patient's No. of Marriage and Result of PAP smear.

No. of Marriage	Result of PAP Smear				P Value
	-ve intraepithelial neoplasia		+ve intraepithelial neoplasia		
	No	%	No	%	
Once	793	95.6	122	71.7	0.000*
Twice	36	4.3	43	25.4	
More than twice	1	0.1	5	2.9	
Min. - Max.	3-Jan			3-Jan	0.000*
Mean±S.D.	1.046±0.216			1.312±0.522	

difference between two groups where P=0.002 (P significant as P<0.05).

As regard to relation between patient's marital status and result of PAP Smear there were negative intraepithelial neoplasia group (809 (97.5%) patients were married and 21 (2.5%) patients were not married now (10 (50%) patients were divorced and 11 (50%) patients were widow) while in positive intraepithelial neoplasia group (161 (94.6%)patients were married and 9 (5.4%)patients were not married now (5 (60%) patients were divorced and 4 (40%) patients were widow). There was no statistically significant difference between two groups where P=0.060 (P significant as P<0.05).

According to relation between patient's duration of marriage and Result of PAP Smear there were negative intraepithelial neoplasia group was ranged between 1-46 years with a mean of 10.09±7.121 while in positive intraepithelial neoplasia group was ranged between 2-48 years with a mean of 14.06±9.141. There was statistically significant difference between two groups where P=0.000 (P significant as P<0.05)

As regard to relation between patient's gravidity and result of Pap smear showed that in negative intraepithelial neoplasia group was ranged between 0-10 times with a mean of 2.58±1.566 while in positive intraepithelial neoplasia group was ranged between 0-11 times with a mean of 3.98±2.642. There was statistically significant difference between two groups where P=0.000 (P significant as P<0.05).

As regard to relation between patient's parity and result of PAP Smear show that in negative intraepithelial neoplasia group was ranged between 0-8 deliveries with a mean of 2.44±1.253 while in positive intraepithelial neoplasia group was ranged between 0-10 deliveries with a mean of 3.08±1.803. There was statistically significant difference between two groups where P=0.000 (P significant as P<0.05).

As regard to relation between patient's duration of last contraception and Result of PAP Smear there were negative intraepithelial neoplasia group was ranged between 1-16 years with a mean of 2.67±2.490 while in positive intraepithelial neoplasia patients group was ranged between 1-13 years with a mean of 3.86±3.102. There was statistically significant difference between two groups where P=0.000 (P significant as P<0.05).

According to relation between condom usage and Result of PAP Smear there were (negative intraepithelial neoplasia group (112 (13.49%) patients were on condom as a contraception method and 718 (86.51%) patients were non user) while in positive intraepithelial neoplasia group (8 (4.71%) patients were on condom as contraception method and 162 (95.29%) patients were non user). There was statistically significant difference between two groups where P=0.001 (P significant as P<0.05).

Discussion

Cervical Cancer (CC) is a deadly preventable neoplasm with known Cervical cancer remains a huge burden in developing countries where cervical cancer screening rates are currently low, ranging between 6-8%. A systematic analysis of cervical cancer in 187 countries between 1980 and 2010 found that developed countries with comprehensive cancer screening programs have recorded sustained declines in cervical cancer incidence and mortality while many developing countries in sub-Saharan. In Egypt early detection of precancerous cervical lesions through screening remains a critical health care service intervention for reducing cervical cancer incidence and mortality particularly in low-resource etiology and precursor lesions of slow evolution, could to be screened. Africa have experienced upsurges in new cases. Cytology-based screening is a highly effective method of secondary Nearly all cervical cancer cases arise from CIN lesions, but not all CIN lesions progress to cancer. Actually, many persist without change or even settings where HPV vaccination coverage is poor. Prevention and control of cervical cancer in developed countries. It is believed that CIN I and II are more likely to regress than to progress; only 10.0%-15.0% of CIN I lesions are progress to CIN II and III/CIS, and 50.0% of CIN II and 30.0% of CIN III regress lesion, the greater the chance it will progress to cancer; the progress of spontaneously.

CIN I to invasive cancer can take decades. On the contrary, the higher the grade of the precursor the present study was carried out on 1000 patient recruited from El- Shatby Maternity University Hospital clinics. In this study our result categorized in:377 smears (37.7%) were normal, 453 smears (45.3%) were inflammatory, and 170 smears (17%) were abnormal cytology (+ve intraepithelial neoplasia):111 smears (11.1%) were ASCUS, 29 smears (2.9%) were LSIL.13 (1.3%) smears were HSIL, 11 (1.1%) smears were ASC-H.3 smears (0.3%) were AGS-NO, 3 smear (0.3%) were AGS-favor neoplastic. As we mentioned before the majority of smears 45.3% were inflammatory smear and 17% were abnormal cervical cytology, This was agreement with Mosuro et al(2015) (86) who reported that 59.3% of smears were inflammatory and 16.4% were abnormal cervical cytology. The presence of inflammatory cells on cervical smears is not necessarily due to infection. It could be due to reactive or reparative cellular changes of the

On contrary sanad et al., (2014) reported lower prevalence of cervical cytological abnormality were 7.7%, also Shalabi et all (2018)

reported that cervical cytological abnormality were 6.5% where 89.7% of smears were ASCUS, 3.4% were ASC-H and 6.8% were LSIL. Lastly, the differences observed between this study and other studies could be attributed to the differences in technical screening methods, geographic, environmental, genetic diversity, and sociodemographic and cultural background of the study population [4,6,7].

In our study prevalence of abnormal cervical cytology in age group < 30 was (8.4%) which is lower prevalence than in middle age group from (30-49) which was (19.9%). this was with the agreement with Sanad et al(2014) (89) who found that prevalence of abnormal cervical cytology in

The American Cancer Society reported „Women who have had 3 or more full-term pregnancies have an increased risk of CC (91) This goes hand with our findings where 69% of abnormal cervical cytology was between patients who had parity ≥3, also in concordance to our result El. Mohali et al. (2015) (92) reported that there was a significant risk factor in parity ≥3 about 74.6% of abnormal cervical cytology, There is one theory states that these women may have had more exposure to HPV infection because of having unprotected intercourse to get pregnant. Other studies have attributed this to hormonal changes during pregnancy, as it makes women more susceptible to HPV infection or cancer growth. An additional thought is that pregnant women might have weaker immune systems, cervix following injury, radiation, intrauterine devices or atrophy, our result also show agreement with Richter et al (2013) who reported that 17.3% of his smears were abnormal cervical cytology, categorized in ASCUS was 4.7%, LSIL 3.0%, HSIL 9.1% and 0.5% had cytology suggestive of squamous carcinoma.

In our study we found a significant association between young age of first intercourse and abnormal cervical cytology, as 60.2% of abnormal cervical cytology was found in patients who were sexually active before age of 20, so there was agreement with El-Moselhy et al., (2015) who reported the same significant association between early age of marriage (<20) and cytological abnormality [5,8,9].

In our study there was 53%of cervical cytological abnormality in patients who had normal vaginal delivery which was more than other patients group (nullipara, had cs delivery), as these women were exposed to more cervical trauma during vaginal delivery especially multipara women, this with agreement with Skegg et al., (2013) who found that women with vaginal delivery were at higher risk of cervical cancer especially multipara women with low social class.

Cigarette smoking is established as a cofactor of HPV for cervical cancer. The prevalence of HPV is increased in associated with active smoking it seems that the risk is dose-dependent and disappears after smoking cessation. In our study 60.9% of abnormal cervical cytology was among smoker patients (active and passive), 42.7% of abnormal cervical cytology found among passive smoker patients, this was agreement with Min, Kyung-Jin et al. (2017) who reported that passive smoking among non-smokers is associated with the risk of CIN. Especially non-smoking women who exposed to passive smoking for 2 or more hours per day.

On the contrary, Louie et al., (2011) (showed no association of passive smoking and risk of cervical cancer in the absence of active smoking. The study of the effect of cigarette smoking on cervical cancer is complicated by other risk factors such as sexual practice. Most studies reported an approximate doubling in the risk of CIN among smokers, but this association is always reduced by readjusting the factor of sexual behavior.

In Egypt there is still persistent gap regarding socioeconomic status between rural and urban areas; the inhabitants in rural areas are facing large problems of poverty and a more difficult access to health care services these factors will increase risk of developing precancerous lesions.

In our result we found that 78.9% of abnormal cervical cytology where between patients come from rural areas which is significantly higher percent than in urban inhabitant., El-Moselhy et al., (2017) reported that strong correlation between socioeconomic class and abnormal cytology, also Irimie et al., (2011) showed that most of patients had poor Socioeconomic class are more likely to get cervical cancer than higher class.

In our study there was no significant difference regarding marital status but there was statistically significant difference according to number of marriage, 91.5% of our patient married once 13.3% of them had abnormal cervical cytology while 8.5% of our patient married twice or more 56.5% of them had abnormal cervical cytology this was in cytological abnormality between patients with multiple life time partner.

Also in agreement with our result elmoselly et al., (2017) (reported strong correlation between number of life time partner and young age of first intercourse as these two risk factor increase the risk of acquiring HPV infection and also assumed that human sperm may act as carcinogenic mutant to cervical cells as there are two basic types of protein are found in)

In our study we found that there was decrease of abnormal cervical cytology between IUD user so there was agreement with Castellsague et al., (2011) who found that the use of IUD is a protective factor. This was explained by the cellular immunity triggered by the IUD. Researchers have theories that could explain how the IUD protects from developing CC. One theory states that the procedure of inserting the IUD may destroy HPV

We found some decrease of abnormal cytology between condom to male this with agreement with El. Mahalli et al. (2015) As it reported that usage of condom to male will lower the risk of STD infection and also abnormal cytology So, the condom was reported a statistically significant protective factor [9-11].

In our study we found that oral contraceptive pills associated with increase of abnormal cervical cytology as 42.9% of abnormal cytology was between user which increase with long duration of usage of pills this was with agreement with El-Moselhy et al. (2016) who reported that OCs usage for long duration was a significant risk factors. Also some studies suggested that with OCs there is increased risk and shorter time of transition from dysplasia to CIS, increase the exposure to carcinogenic agents, but the mitotic inhibitory effect of OCs on cervical epithelium may offset this.

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