

A Screening Study of Cervical Cancer Using Pap Smear Test in Outpatient Clinic of Must University Hospital

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Abstract

Background and Objectives: Despite the well-established importance of early cervical cancer detection, there are no clear data about the prevalence of cervical intraepithelial lesions among Egyptian population due to lack of screening programs. Thus, we conducted this study in order to assess the prevalence of inflammatory, premalignant and malignant cervical lesions among Egyptian population using Pap smear test.

Subjects and Methods: This study included 400 women who presented to the gynecological outpatient clinic of MUST University Hospital in the period between January 2017 and December 2018. Cervical smears were performed by trained gynecologists from both ectocervix and endocervix. Smears were delivered to pathology lab of MUST University for staining by conventional Pap stain. Age, clinical gynecological presentations and the results of clinical examination were recorded. All slides were examined by two pathologists and Pap smear interpretations for inflammatory, premalignant and malignant cervical lesions were evaluated according to the Bethesda system 2001.

Results: A total number of 400 female patients underwent cervical Pap test for detection of various cervical lesions. The majority of the women were between the age of 41-50 years old (35%), followed by women aged 31-40 years old (30%). The clinical examination showed no gross abnormalities in 250 women (62.5%), cervical erosion in 70 women (17.5%), leucorrhea in 50 women (12.5%), cervical polyp in 20 women (5%), uterine descend in 7 women (1.8%) and cervical mass in 3 women (0.7%). Overall, the incidence of epithelial cell abnormalities was 7.5% (30 women). The most commonly encountered abnormalities were atypical squamous cell of underdetermined significance (1.8%) and low grade squamous intraepithelial lesions (1.8%), followed by atypical squamous cell cannot exclude high grade squamous intraepithelial lesions (1.25%). Cervical cancer was detected in 1% of cases with equal ratio between squamous cell carcinoma and adenocarcinoma.

Keywords: Pap Smear; Cervical Intraepithelial Neoplasia; Cancer Cervix

Introduction

Cervical cancer (CC) is the second most common gynecological cancer worldwide and the third leading cause of cancer-related mortality in the less developed countries [1]. It was estimated that more than 527,600 new cases of CC were reported worldwide, with around 265,700 cases of death [2]. It was reported that the highest incidence of mortality rates were observed in Africa. According to the world health organization (WHO), CC ranks as the 13th most frequent cancer among Egyptian women; every year, 866 women are diagnosed with CC and 373 die [3]. The estimated prevalence of high-grade pre-invasive CC in Egypt was ranged from 0.3% to 0.5% [4].

Human papilloma virus (HPV) is the major risk factor of CC [5]. Low population coverage, poor cytology, incomplete monitoring and obstacles to efficient therapy of screen positive females all lead to poor achievement of CC prevention programs in low- and middle-income countries [6].

Concerning the prevention, CC may be prevented or diagnosed at early stages due to the easy accessibility and clinical evaluation of the cervix. If precancerous lesions are diagnosed and handled, mortality from CC may be avoided, if not lowered. Cervical intraepithelial neoplasia (CIN) takes up to 15 years to develop into CC [7].

The Papanicolaou (Pap) test is a screening test used for cervical cancer. Using Pap smear test, cervical dysplasia can be early diagnosed.

Pap smear comprises of the collection and subsequent examination of the superficial cells of the transformation zone by a cytopathologist [8,9]. In many research, Pap smear's sensitivity is less than 70 percent. Therefore, Pap smear may not be an adequate

diagnostic test for cervical precancerous lesion. Consequently, some undiagnosed cases of cervical dysplasia may develop into cervical cancer. The addition of HPV testing to cervical cancer screening strategies has improved detection of cervical neoplasia [10-12]. Therefore, in this study, we aim to assess the prevalence of inflammatory, premalignant and malignant cervical lesions among Egyptian population using Pap smear technique.

Materials and Methods

The present study was conducted through the period from January 2017 to December 2018 at Obstetrics and Gynecology department and Pathology department of MUST University Hospital 6th of October city, Giza, Egypt. The study's protocol gained the approval of the local ethics and research committee of MUST University. Four hundred women aged 20-80 years old who visited the gynecology outpatient clinic with various clinical presentations such as vaginal discharge (n= 100), menstrual irregularities (n= 100), post-coital bleeding (n= 70), routine checkup (n= 70), postmenopausal bleeding (n= 35) and back pain (n= 25) were included in the present study. We excluded pregnant women and those with history of cervical cancer treatment. Smears were taken by trained gynecologist from both ectocervix and endocervix. All slides were delivered to the pathology lab, labeled, immediately fixed in 95% ethyl alcohol and subsequently stained by Pap stain. Adequate sampling was assessed based on the presence of sufficient, well-preserved and well-visualized number of squamous epithelial cells and the presence of endocervical cells of transformation zone. All smears were examined by two pathologists and reported according to the 2001 Bethesda system [13]. All included patients were lived in Giza governorate. Age, clinical gynecological presentations, results of clinical examination and Pap smear interpretations were collected and analyzed for every participating woman.

Statistical Analysis

Data entry, processing, and statistical analysis were carried out using Microsoft Excel 2007 (Microsoft Corporation, NY, and the USA) and SPSS (Statistical Package for the Social Science; SPSS Inc., Chicago, IL, USA) version 22 for Microsoft Windows. Quantitative data were described in terms of mean \pm standard deviation (\pm SD), while qualitative data were expressed as frequencies (number of cases) and relative frequencies (percentages).

Results

The present study included 400 women who underwent Pap smear test for the detection of various cervical lesions. Ten percent of the women aged 20-30 years, 30% aged 31-40 years, 35% aged 41-50 years, 12.5% aged 51-60 years, and 12.5% aged above 60 years old. On clinical examination, the majority of the women had no gross abnormality (62.5%), 17.5% had cervical erosion, 12.5% had leucorrhea, 5% had cervical polyp, 1.8% had uterine decent and 0.7% had cervical mass (Table 1).

Variables	No =400 & %
Age groups:	
20-30ys	40 (10%)
31-40ys	120 (30%)
41-50ys	140 (35%)
51-60ys	50 (12.5%)
Above 60	50 (12.5%)
Clinical examination:	
No gross abnormality	250 (62.5%)
Cervical erosion	70 (17.5%)
Leucorrhea	50 (12.5%)
Cervical polyp	20 (5%)
Uterine descend	7 (1.8%)
Cervical mass	3 (0.7%)

Table 1: Clinical findings of the included patients

Overall, the incidence of epithelial cell abnormalities was 7.5% (30 women); while 87.5% of women had negative results for intraepithelial lesions or malignancy and 5% had unsatisfactory Pap smear. The most commonly encountered epithelial abnormalities were atypical squamous cell of undetermined significance (ASCUS) and low grade squamous intraepithelial lesions (LSIL) (1.8% each), followed by atypical squamous cell cannot exclude high grade squamous intraepithelial lesions (ASC-H) (1.3%), high grade squamous intraepithelial lesion (HSIL) (1%), atypical glandular cells not otherwise specified (AGUS-NOS) (0.8%), squamous cell carcinoma (SCC) (0.5%), and adenocarcinoma (ADC) (0.5%). Concerning patients with negative results for intraepithelial lesions or malignancy, the highest ratio (37.5%) was represented by nonspecific inflammation. Normal Pap smear cytology (17.5%) and bacterial vaginosis (12.5%) were represented by less number of patients followed by atrophic changes (7.5%), reparative changes (IUD/ post cauterly) (6.25%), Candida (3.75%) and Trichomonas vaginalis infections (2.5%) (Table 2).

Variables	No&%
Pap smear interpretation:	
- Unsatisfactory	20 (5%)
- Epithelial cell abnormality	30 (7.5%)
- Negative for intraepithelial lesion or malignancy	350 (87.5%)
Epithelial cell abnormalities: (No=30)	
- ASCUS	7 (1.8%)
- ASC-H	5 (1.25%)
- LSIL	7 (1.8%)
- HSIL	4 (1%)
- SCC	2 (0.5%)
- AGUS-NOS	3 (0.7%)
- ADC	2 (0.5%)
Negative for intraepithelial lesion or malignancy: (No=350)	
- Normal cytology	70 (17.5%)
- Nonspecific inflammation	150 (37.5%)
- Atrophic changes	30 (7.5%)
- Reparative changes (IUD/ post cauterly)	25 (6.25%)
- Trichomonas vaginalis	10 (2.5%)
- Bacterial vaginosis	50 (12.5%)
- Candida	15 (3.75%)

Table 2: Pap smear interpretation of the included patients

ASCUS: Atypical squamous cells of undetermined significance; ASC-H: Atypical squamous cell cannot exclude high grade squamous intraepithelial lesions; LSIL: Low grade squamous intraepithelial lesion; HSIL: High grade squamous intraepithelial lesion; SCC: Squamous cell carcinoma; AGUS-NOS: atypical glandular cells not otherwise specified; ADC: Adenocarcinoma.

There were no statistically significant associations between Pap smear interpretations and age groups ($p=0.21$), clinical presentations ($p=0.31$), or clinical examination results ($p=0.43$) (Table 3).

Variables	Negative for intraepithelial lesion or malignancy (N=350)	Epithelial cell abnormality (N=30)	P-value
Age groups:			
- 20-30ys	33 (9.4%)	2 (6.7%)	0.21
- 31-40ys	110 (31.4%)	5 (16.7%)	
- 41-50ys	127 (36.3%)	13 (43.3%)	
- 51-60ys	38 (10.9%)	7 (23.3%)	
- Above 60	42 (12%)	3 (10%)	
Clinical presentation:			
- Vaginal discharge	88 (25.2%)	10 (30%)	0.31
- Menstrual irregularities	89 (25.4%)	7 (23.3%)	
- Post-coital bleeding	65 (18.6%)	5 (20%)	
- Routine checkup	61 (17.4%)	5 (16.7%)	
- Postmenopausal bleeding	27 (7.7%)	1 (3.3%)	
- Back pain	20 (5.7%)	2 (6.7%)	
Clinical examination:			
- No gross abnormality	208 (59.4%)	22 (73.4%)	0.43
- Cervical erosion	67 (19.2%)	3 (10%)	
- Leucorrhea	48 (13.7%)	2 (6.7%)	
- Cervical polyp	19 (5.4%)	1 (3.3%)	
- Uterine descend	6 (1.7%)	1 (3.3%)	
- Cervical mass	2 (0.6%)	1 (3.3%)	

Table 3: Correlation between clinical data and Pap smear results

Discussion

In the present study the main target was to evaluate Pap smear test as screening and diagnostic procedure for the detection of different cervical lesions with considerable attention for diagnosis of premalignant lesions at an early stage, thereby helping more efficient management of the patients. The maximum ratio of our females was in the age group 41-50 (35%) followed by age group 31-40 (30%). The commonest clinical presentations were vaginal discharge (n=100) and menstrual irregularities (n=100) followed by post-coital bleeding (n=70) and routine checkup (n=70). The highest ratio of our patients (62.5%) had no gross abnormalities on clinical examination followed by cervical erosions (17.5%) and leucorrhoea (12.5%). Out of 400 female patients, 5% had unsatisfactory Pap smear, 87.5% of women had negative results for intraepithelial lesions or malignancy and 7.5% had epithelial cell abnormalities represented as ASCUS (1.8%), LSIL (1.8%), ASC-H (1.25%), HSIL (1%), AGUS-NOS (0.7%), SCC (0.5%) and ADC (0.5%).

Comparable study reported that the maximum number of patients was in the age group of 31–40 years followed by the age group of 15–30 years. The common presenting complaint was leucorrhoea followed by pelvic pain. The common clinical findings were absent gross lesions followed by cervical erosions. In 86.45% of patients, Pap smears were reported as negative for any intraepithelial lesion or malignancy. In 8.9% of patients, smears were unsatisfactory or inadequate for reporting and 4.65% of cases showed epithelial cell abnormality [14].

In this study, we noticed that a considerable proportion of Egyptian women (30 out of 380) with satisfactory Pap smear test have suspected cervical lesions who should undergo further investigations. Overall, the incidence of epithelial cell abnormalities was 7.5%, which was most commonly represented by atypical squamous cell of undetermined significance (ASCUS) 1.8% and low grade squamous intraepithelial lesions (LSIL) 1.8%, followed by atypical squamous cell cannot exclude high grade squamous intraepithelial lesions (ASC-H) 1.25%.

These results were in agreement with *El-Moselhy et al.* who reported a prevalence of epithelial abnormalities of 8.25% [15]. Similarly, *Abd El All et al.* used Pap smear for detection of cervical lesions among Egyptian women, aged 35-50 years old; the results showed that the prevalence of epithelial abnormalities was 7.8%, most commonly atypical squamous cell of undetermined significance and atypical glandular cell of undetermined significance [4]. These figures were similar to reports from other regions such as United Arab Emirates [16], China [17], and India [18,19].

However, our findings were in discordance with other reports. For example, *Chandni et al.* and *Hammad et al.* reported a prevalence of 4.6% and 3.5% for cervical epithelial cell abnormalities among Indian and Egyptian women respectively [14-20]. In addition, epithelial abnormalities were reported by another study from Egypt in a prevalence of 1.6% [21]. These discrepancies may be attributed to widespread difference in the prevalence of risk factors and difference in availability of screening program in addition to the limitations of Pap smear test probably due inadequate collection, sample preparation errors, and the possibility of inaccurate microscopic examination [22].

The incidence of CC was reported to be quite high in developing countries because the prevention programs are either nonexistent or poorly implemented [18]. In the present study, the incidence of SCC and ADC was 1%. In agreement with our findings, *Refaat* performed a cross section project on women residing in 10 Egyptian governorates and reported that 1% of the studied women showed invasive cervical carcinoma [23]. Other reports showed that the incidence of cervical SCC in Egypt is a round 0.5% [4]. A Saudi Arabian study showed that the prevalence of squamous cervical carcinoma was 0.34% [24].

In this study, the commonest age group associated with epithelial cell abnormalities was 41-50. Vaginal discharge was the commonest accompanied clinical presentations and absent gross abnormalities and cervical erosions were the commonest clinical findings. There were no statistically significant associations between Pap smear interpretations and age groups, clinical presentations or clinical examination results.

Parallel study recorded that the mean age of patients with epithelial cell abnormality smears was 42.6 years. Vaginal discharge was the most common presenting complaint and cervical erosion was the commonest associated clinical finding with epithelial atypia [14].

In this study, nonspecific inflammation, normal cytology and bacterial vaginosis were the commonest Pap smear findings in negative intraepithelial lesion group of patients.

Matching study reported that Pap smears negative for intraepithelial lesion or malignancy, included normal cytology findings, reactive cellular changes associated with nonspecific inflammation and shift in flora suggestive of bacterial vaginosis as the commonest interpretations [14].

Conclusion

A considerable proportion of Egyptian women have suspected cervical lesions that should undergo further investigations. The present study highlights that the Pap smear test is a feasible and non-invasive technique that should be performed routinely by young women for early detection of cervical abnormalities. Further, large-scale studies are still needed to confirm our findings.

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