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## Analysis of Cervical Smears in a Muslim Population

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**Background:** Screening for cancer of the cervix remains a neglected health care issue in Pakistan. To provide baseline data for future efforts to improve screening, we conducted a retrospective analysis of cervical smears taken in the obstetrics and gynaecological clinics of the Aga Khan University Hospital, Karachi, Pakistan.

**Method:** We collected data on cervical smear cytology for cervical smears taken from January 1, 1990 to December 31, 1996. We assessed risk factors for dysplasia, including age, age at first marriage, and number of pregnancies.

**Results:** The overall prevalence of abnormal smears in our study was 0.5%. Of 20,995 cervical smears, 12,451 (59.3%) smears showed non-specific inflammation, 7302 (34.8%) were reported as normal, 809 (3.85%) showed monillial infection, 148 (0.71%) showed atypia, 105 (0.5%) had dysplastic cytology, and 52 (0.25%) samples were inadequate. The highest incidence of dysplastic smears was seen in the age group 35 to 44 years. Of 105 patients with dysplasia, 12 were pregnant, and all were asymptomatic, while in 93 non-pregnant women, 33 were symptomatic.

**Conclusion:** The low prevalence of abnormal smears, compared with data from Western populations, could be due to the inherent bias of health awareness in the women who attended our hospital. The results of this study may serve as a baseline for future comparisons. A larger community-based study may establish the exact prevalence of malignant and premalignant lesions so as to plan for future screening.

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**Keywords:** Screening, cervical cancer, Muslim population, Pakistan

Cervical smears have been used in developed countries for at least 40 years as a tool for early detection of precursor lesions of cervical cancer. In Pakistan, however, no screening program has been launched at a national or provincial level because the main focus of health care planners and providers has been on issues related to maternal mortality and the control of population growth. Screening for cancer of the cervix remains a neglected health care issue.

Surveys from different centers in Pakistan have shown that cervical cancer is the third most common malignant tumor in women, accounting for 8.7% to 11.1% of all cancers.<sup>1,2</sup> The incidence of preclinical disease in Pakistani women is difficult to assess as only one study has been published addressing this issue.<sup>3</sup> In this hospital-based study, 8784 cervical smears obtained from 8417 women attending the gynaecological and antenatal clinics were reviewed. Positive smears were found in 111 (1.3%) patients, while 107 (1.27%) smears showed squamous epithelial dysplasia and 4 smears showed adenocarcinoma.

The presence of risk factors such as low socioeconomic status, multiparity and early age at marriage in our population make it important to analyze the issue. The purpose of this paper is to present the results of abnormal smears over 7 years at the Department of Obstetrics and Gynaecology of the Aga Khan Medical University Hospital, Karachi.

### Methods

This study was a retrospective analysis of cervical Pap smear results of all women attending the obstetrics and gynaecology clinics of the Aga Khan University Hospital, Karachi, over a 7-year period. The Aga Khan University Hospital, Karachi, is a 600-bed referral center for secondary and tertiary care supported by a medical school and school of nursing. General practitioners and gynaecologists in the community refer patients to the outpatient clinics

and patients visit the clinic without referral. Some patients come only for a routine check up in the gynaecological clinics.

A questionnaire was completed to record information on cervical smears from the medical record files of these patients. The dysplastic cytology was reported according to the new Bethesda classification.<sup>4</sup> In this classification, a low-grade squamous intra-epithelial lesion incorporates mild dysplasia while a high-grade squamous intraepithelial lesion includes the moderate, severe and carcinoma-in-situ categories. In cases where colposcopy and histopathological biopsyresults were available they were documented. If the abnormal smear was repeated, the new result and duration between smears was recorded. For the risk factor assessment, age, number of pregnancies and age at marriage (assumed to be the age at first sexual contact) was noted. In all cases, the cervical smear was taken from the exocervix and the squamio-columnar junction with an Ayer's spatula, after insertion of a bivalve vaginal speculum. The smear was fixed with an alcohol fixative (Vale smear fix; Vale laboratories, London, England) and sent for cytopathological assessment.

**Table 1. Frequency and (%) distribution of cervical smear cytology.**

	n	%
Non-specific inflammation	12,451	59.3
Normal	7,302	34.8
Atypia	148	0.71
Candida	809	3.85
<i>Trichomonas vaginalis</i>	128	0.61
Inadequate sample	52	0.25
Dysplastic smears	105	0.5
Total	20,995	100

**Table 2. Frequency and percent distribution of dysplastic smears.**

	n	%
Low grade squamous intraepithelial lesions	54	51.4
High grade squamous intraepithelial lesions	31	29.5
Squamous cell carcinoma	10	9.5
Adenocarcinoma	8	7.6
Carcinoma (N.O.S)	2	1.9
Non epithelial malignant neoplasm	0	0
Total	105	100

**Table 3. Histological diagnosis of 50 patients with abnormal smears.**

	n	%
No dysplasia	6	12
CIN-1	7	14
CIN-2	13	26
CIN-3	7	14
Invasive cervical carcinoma	17	34
Total	50	100

## Results

Of 20 995 cervical smears, 12 451 (59.3%) showed nonspecific inflammation, 7302 (34.8%) were normal, 809 (3.85%) revealed Candida infection, 148 (0.71%) showed atypia, 128 (0.61%) had trichomonas infection, 105 (0.5%) had dysplastic cytology while only 52 (0.25%) were inadequate samples (Table 1). Of 105 dysplastic smears, 54 (51.4%) had low-grade squamous intra-epithelial neoplasia, 31 (29.5%) had high-grade squamous intra-epithelial neoplasia, 10 (9.5%) had squamous cell carcinoma, 8 (7.6%) had adenocarcinoma, and 2 (1.9%) had carcinoma not otherwise specified (Table 2). Of the 105 women with dysplastic cytology, 12 were pregnant while 93 were not pregnant. All 12 pregnant women were asymptomatic, while 33 of the 93 non-pregnant were symptomatic. Thirty had experienced abnormal vaginal bleeding, two presented with postcoital bleeding, while one patient had both of these symptoms.

Colposcopy was performed on 50 of the 105 women with dysplastic smears and colposcopy directed biopsies were taken. Seven (14%) had CIN-I, 13 (26%) CIN-II, 7 (14%) had CIN-III, and 17 (34%) had invasive cervical carcinoma, while 6 (12%) showed no dysplasia (Table 3). Twenty-seven (26%) of the 105 dysplastic smears were found in the age group of 35 to 44 years (Table 4).

In the risk factor assessment of the 105 women with dysplasia, the highest proportion of dysplastic smears was found in gravida 2 women [19 (18.1%)] followed by gravida 3 [16 (15.2%)]. Table 5 shows the frequency of dysplastic smears with respect to age at marriage, assumed to be the age at first sexual contact in our society. This data was available for only 67 of the 105 women. Fifty-two (77.6%) of the 67 women married between the ages of 16 to 24 years.

## Discussion

As cervical smears are not routinely performed in Pakistan, it is difficult to obtain figures for the prevalence of preclinical disease. The overall prevalence of dysplastic smears in our study is 0.5%, which is much lower than in the North American<sup>5</sup> and Jewish population,<sup>6</sup> in whom reported rates are 2.3% and 1.7%, respectively. The low prevalence in our study might be because women attending the Aga Khan University Hospital belong to the upper middle and higher socio-economic strata of urban Karachi. These women are educated and have greater health awareness.

The peak age-specific dysplastic cytology rate was seen in the 35 to 44 years age group, followed by the 25 to 34 years age group (27% and 24%, respectively). This is not consistent with the results of a North American study reporting peak age-specific dysplastic cytology in the 23 to 34 year age group.<sup>5</sup> This difference may be due to a lower prevalence of risk factors, such as multiple sexual partners, smoking and the use of oral contraceptives in our population. These factors are known to contribute to the disease in younger women.

Age at first sexual intercourse, which is taken as age at marriage, was available for only 67 women with dysplastic smears. Fifty-two (77.6%) women with dysplasia had an age at marriage between 16 and 24 years. This is consistent with early age at sexual intercourse being a risk factor for cervical carcinoma.<sup>7</sup> The practice of marrying women at a very young age is widespread in our society. Therefore, there is a need to be aware that early age at marriage can be a predisposing factor for the later development of dysplastic cervical lesions.

**Table 4. Age distribution of dysplastic cervical cytology.**

Age	Low grade	High grade	Squamous cell	Adenocarcinoma	Carcinoma (N.O.S)	Non-epithelial malignant neoplasm	Total
15-24	8	0	0	0	0	0	8
25-34	18	6	0	0	0	0	24
35-44	18	8	1	0	0	0	27
45-54	6	7	1	0	1	0	15
55-64	2	4	6	4	1	0	14
65	2	6	2	4	0	0	14
Total	54	31	10	8	2	0	105

**Table 5. Age at marriage of 67 women with dysplastic cervical cytology.**

Age	n	%
<16	4	6
16-24	52	77.6
25-34	10	15
35-44	1	1.5.
45-54	0	0
55-64	0	0
>65	0	0
Total	67	100

The analysis of cervical smears in this study was also used to analyze our practice of obtaining a cervical smear. Inadequate samples were reported in 0.25% of the total smears. An effort was made to improve the smear taking skills of the residents and other members of the medical staff who were involved in taking the cervical smears.

Of the 31 patients with high-grade squamous intraepithelial lesions, 6 had no colposcopy and 2 underwent hysterectomy for gynaecological indications. The records of 4 patients could not be traced. Loss of follow up is common in most developing countries and is clearly a problem in our study as well. Colposcopy was performed in the remaining 19 cases and a histological diagnosis was obtained. Forty-six of the 54 women with low-grade squamous intraepithelial lesions had a repeat Pap smear after a mean duration of 6 months. Thirty-five of these were found to be normal, while 11 showed persistent abnormality and were followed by histological evaluation. Keeping in mind cost effectiveness and safety our policy is to perform a colposcopy of low-grade lesions if the lesion progresses or the abnormality persists on a repeat Pap smear. Singh and colleagues in India have assessed the efficacy of visual screening for cervical cancer.<sup>8</sup> However, visual inspection may not be sensitive and specific enough to detect early cancer owing to the range of apparently normal cervixes. A false positive diagnosis may result in undue anxiety if a definite diagnosis cannot then be made due to lack of resources. Therefore, we would emphasize that proper cytological screening should be introduced for the high-risk female, so as to reduce the incidence of and mortality from cervical cancer in a developing country like Pakistan.

Is it possible to initiate a systematic cervical screening program in a developing country like ours where less than 2% of the GNP is spent on health? Will the program reach out to women who are at high risk? Follow up of abnormal or inadequate smears may be difficult due to logistical reasons. Even if women present for follow up, the present health care system may not be able to meet the various therapeutic and diagnostic requirements. The full effect of systematic high quality screening may not be seen for some 10 to 15 years from onset, after the second and third screening rounds have been completed. For the future, the challenge for us is to increase awareness regarding cervical screening among the health care providers and the patients, so that screening for cervical cancer can be incorporated into maternal health care and family planning programs. The results of this study could serve as a baseline for future studies.

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