# CERVICAL SMEAR

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**ABSTRACT: Objective:** To review cervical smear results in women of reproductive age group. **Study design:** Descriptive study. **Place and duration of study:** This study was carried out at the pathology department, Railway hospital, Islamic International Medical College Trust. Rawalpindi, from Jan 2007-Dec 2010. **Materials and methods:** A total of four hundred and seventy seven cervical smears were included in the study. Inclusion criteria was females of reproductive age group. Smears from postmenopausal women and those who had hysterectomy were excluded from the study. The cervical smear was taken using modified Ayres wooden spatula, or plastic spatula, to collect endocervical sample. The slides prepared were immediately fixed in 95% ethyl alcohol, and were subsequently stained by the recommended procedure of Pap staining. After staining, the slides were mounted with Canada balsam and finally reported by the cytopathologist according to the Bethesda System. **Results:** Four hundred and seventy seven patients were included in the study. Most of the patients belonged to low socio economic status. The cytological examination of the smears showed inflammatory changes in 33% (n=159) cases, normal smears/ no positive finding in 25% (n= 118) cases, while reactive changes were seen in 2% (n= 10). Dysplastic changes were seen in 2 %( n= 10), while unsatisfactory/ Inadequate samples were reported in 38 %( n=182) cases.

**Key words:** Endocervical cells, Papanicolaou smear, Dysplasia.

## INTRODUCTION

Cervical cancers are associated with poverty, sexually transmitted infection and a high prevalence in developing countries. Globally it is the second most common cancer in women after breast cancer[1]. It is one of the most preventable and curable of all cancers. Surveys from different centers in Pakistan have shown that cervical cancer is the third most common malignant tumor, accounting for 8.7% to 11.1% of all cancers in this region[1,2,3].

Cervical smears have been used for at least 50 years as a tool for early detection of precursor lesions of cervical cancer in developed countries. 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[1].

The Papanicolaou (Pap) smear is the standard screening tool used to detect the presence of abnormal cells in cervical smears. It is a simple, safe, non-invasive and cost effective method for detection of pre-cancerous, cancerous and non-cancerous changes in the cervix and vagina.

The Bethesda System, 2001(T BS) is the standard used, for reporting of cervical cytology internationally. In addition to defining the diagnostic categories, it also defines criteria for determining the adequacy and quality of Pap smears, as this correlates well with the frequency of detection of abnormalities[4,5].

In TBS, sample adequacy criteria includes the presence of cells from the endocervical/ transformation zone, with a minimum of two clusters of well-preserved endocervical glandular and/or squamous metaplastic cells[6].

Cervical smears should be taken in a proper way by an experienced person to avoid an inadequate smear. It is now recommended that all patients with abnormal

cytology should undergo further investigations. Co-existing infections may obscure the picture so that the cytologist cannot make a definite diagnosis. In such cases a repeat smear is advisable, preferably after treating the infection[7].

Inflammation on Pap smear is considered a relatively benign finding. However, due to the low sensitivity and high false negative rate of Pap smear there is a possibility that an inflammatory Pap smear may miss cervical premalignant changes. All women with persistent inflammation on Pap smear should be subjected to further evaluation.

A large number of women with cervical interaepithelial neoplasia (CIN) would be missed if persistent inflammation on Pap smear is not evaluated further[8].

## MATERIALS AND METHODS

A retrospective analysis of cervical smears was done in Railway hospital, IIMCT, Rawalpindi of smears taken from January, 2007 to December, 2010, over a period of 4 years. All smears from women of reproductive age group were included in the study. Exclusion criteria was postmenopausal and posthysterectomy smears. Endocervical cells were regarded as present when at least two typical clusters of endocervical cell or metaplastic cells were seen.
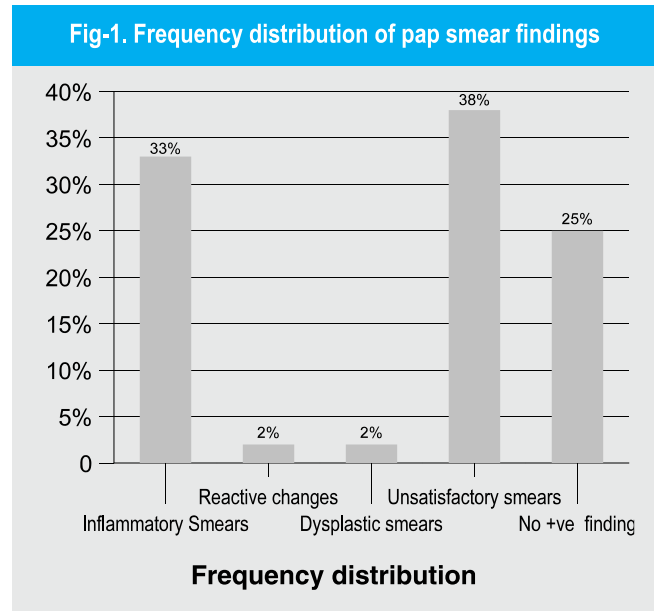
The cervical smear was taken using modified Ayres wooden spatula, or plastic spatula, to collect endocervix sample. The slides prepared were immediately fixed in 95% ethyl alcohol, and were subsequently stained by the recommended procedure of Pap staining. After staining, the slides were mounted with Canada balsam and were screened by the cytotechnologist and finally reported by the cytopathologist according to the Bethesda System.

## RESULTS

Four hundred and seventy seven patients were included in the study. Most of the patients belonged to low socio economic status.

The cytological examination of the smears showed inflammatory changes in 33% (n=159) cases, normal/ no positive finding in 25% (n= 118) cases, while reactive

changes were seen in 2% (n= 10). Dysplastic changes were seen in 2 %( n= 10), while unsatisfactory/ Inadequate samples were reported in 38 %( n=182) cases as shown in Fig 1.



Fig-1. Frequency distribution of pap smear findings

**Frequency distribution**

| Table-I. Categories and frequency distribution of unsatisfactory Pap smears | | |
|---|---|---|
| | Number | %age |
| No endocervical / transformation zone cells | 129 | 70.88% |
| Scant squamous cellularity | 27 | 14.83% |
| partially or completely obscuring inflammation | 25 | 13.74% |
| Poor fixation or preservation | 01 | 0.55% |
| Total | 182 | 100% |

## DISCUSSION

More than 200,000-300,000 women have been reported to die from cervical cancer in developing countries each year[9]. Most of the women with cervical cancer experience a long asymptomatic period before the clinical onset of disease. During this period, exfoliation of cervical cells is a continuous process; therefore, early recognition of abnormal cytological changes through regular screening offers early detection and protection against progression from pre invasive to invasive stage

of the disease. Initiation of national screening program in the developed countries has resulted in a marked decrease in the cervical cancer related deaths.

Cervical smears are not routinely performed in Pakistan; therefore it is difficult to obtain figures for the prevalence of preclinical disease. The prevalence of dysplastic smears in our study is 02% (n=10) and almost all women belonging to poor socio-economic class. Poor socio-economic status by itself is a risk factor for development of cervical neoplasia[7].

This figure (02%) is much higher than a study conducted at Aga Khan University Hospital where dysplastic smears were 0.05% of the total. One of the reasons may be that most of these women belonged to the upper middle and higher socio-economic strata of urban Karachi having greater health awareness and educational level[1]. In other local studies the prevalence of dysplastic cervical smears ranges from 3.5% to 4.75%[9,10,11,12] which is comparable to our results.

In our study Inflammation was seen in 33% of cases (n=159) the prevalence was same as in most other local studies.[7,13]. No consistent pattern has been observed in studies from different developed and developing countries. Hence, within countries such as the US, rates have ranged from 2.3 to 6.6%, in the Middle East from 1.6% to 7.9%, in India from 1.87% to 5.9%, in rural Zimbabewe 37% and in Pakistan up to 59.3%[14]. The reasons for this could be many, including criteria employed for diagnosis, the quality checks used, intrinsic differences in the population studied including prevalence of risk factors and the numbers studied which have ranged from as few as 419 to as large as 7,96,337.14 A large number of women with cervical intraepithelial neoplasia (CIN) would be missed if persistent inflammation on Pap smear is not evaluated further[8].

In the present study 38% (n=182) samples were unsatisfactory/ inadequate; the possible reasons may be poor sampling technique or sampling by untrained staff, as it has been observed that Pap smears are usually taken by relatively inexperienced junior doctors or nursing staff. A combination of Colposcopy and cervical smear is also likely to improve screening sensitivity. Appropriate slide preparation is also a pre-requisite for correct interpretation. Hence the risk of error exists at the level of sampling, preparation, transport, or interpretation. Due to these reasons cervical smear cytology may be associated with false negative rates, ranging from 20-45% in different studies[9].

The presence of endocervical cells usually is considered an indicator of an adequate sample. A "satisfactory" Pap smear (a high quality specimen) would be more likely to yield abnormal findings than an unsatisfactory one. This view is supported by cross-sectional studies, in which a lower proportion of abnormalities have been reported in smears without endocervical cells compared to smears with endocervical cells[4,15,16,17,18].

However, longitudinal studies showed no increase in detected abnormalities in negative smears without endocervical cells compared to negative smears with endocervical cells[19,20,21].

## CONCLUSIONS
Our study suggests that correct sampling of the cervix contributes to the screening value of the Pap test. The purpose of designating smears as unsatisfactory is to alert clinicians that the particular smear might not be reliable for detecting preneoplastic or neoplastic conditions. There is an urgent need for the implementation of cervical cancer screening program in Pakistan.
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