**Journal of Advanced Medical and Dental Sciences Research**

@Society of Scientific Research and Studies ***NLM ID:*** *101716117*

Journal home page: www.jamdsr.com doi: 10.21276/jamdsr Index Copernicus value = 85.10

(e) ISSN Online: 2321-9599; (p) ISSN Print: 2348-6805

# Original Research

## Detection of Cervical Cancers and Cytological Pattern of Papanicolaou Smears

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***ABSTRACT*:**
**Introduction:** The objective of this study was to evaluate cervical smears and its role in the screening of cervical cancer and precancerous lesions in a tertiary care hospital. **Materials and Methods:** Relevant clinical data were obtained from the patients and recorded. The specimen for Pap smears were collected from the squamocolumnar junction by the Ayer's spatula and cytobrush under aseptic methods, and the obtained cellular materials were quickly smeared on a clean glass slide. Slides were fixed with absolute alcohol and were stained with Pap stain. **Results:** Negative for intraepithelial lesion or malignancy (NILM) was reported in 97.4% of all the adequate smears and 90.8% of the total smears taken for the study. Out of all the NILM cases, majority cases (94.8%, i.e., 4346/4581) were reparative benign cellular reactive changes, followed by normal smears (5.01% i.e., 235/4581) **Conclusion:** Pap smear testing is a very useful, simple, economical and safe tool to detect preinvasive cervical epithelial lesions.
**Keywords:** malignancy, Pap smear testing, cervical smears.

Received: 25 May, 2020 Accepted: 26 June, 2020

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**This article may be cited as:** Chand T, Jangir NK. Detection of Cervical Cancers and Cytological Pattern of Papanicolaou Smears. J Adv Med Dent Scie Res 2020;8(7):177-180.

### INTRODUCTION:

In developing countries like India, the burden of cervical cancer is still high. According to the World Cancer statistics, >80% of all the cervical cancer cases are found in developing and low-resource countries, because of a lack of awareness and difficulty in running cytology-based screening programs.[1] More than one-fifth of all cervical cancer deaths occur in India.[2] Every year, 122,844 women in India are diagnosed with cervical cancer, and 67,477 women die from the disease.[3]

It is good to know that cervical cancer is on the declining trend in India according to the population-based registries. However still, it is one of the major causes of morbidity and mortality for women in India. Over the past few decades, there have been significant changes in its incidence. This has been possible due to its early detection by screening for cervical cancer is one of the few cancers that can be easily detected at premalignancy phase. Exfoliative cervicovaginal cytology, Papanicolaou (Pap) smear has been regarded as the gold standard for cervical cancer screening programs.[4]

Cervical cancer is a preventable disease due to the long preinvasive stage. Early detection and appropriate treatment are possible if robust screening is implemented.[5] Early cervical epithelial changes can be identified by a Pap smear test, which is the primary screening test for detection of precancerous cervical intraepithelial neoplasia and the early stage of invasive

cervical cancer. Papanicolaou (Pap) smear testing is an effective method of detecting, preventing and delaying the progress of cervical cancer. Even as liquid-based cytology is popular in the developed countries, in low resource settings, a conventional Pap test is the main screening system. It is important to know the overall scenario of epithelial cell abnormality in the Pap smear, especially in a developing country like India which accounts for quarter of the cervical cancer deaths.[6] By knowing the pattern of premalignant and malignant lesions in an area, we can set up screening strategies and counsel women about the need of cervical screening.

The objective of this study was to evaluate cervical smears and its role in the screening of cervical cancer and precancerous lesions in a tertiary care hospital

## MATERIALS AND METHODS:

This is a prospective, cross sectional, descriptive, observational hospital based study conducted in the Department of Medical oncology from August 2019 to June 2020. Ethical approval was obtained from institution review board. Total 933 Pap smears were received during the study period from the Department of Gynaecology. Relevant clinical data were obtained from the patients and recorded. The specimen for Pap smears were collected from the squamocolumnar junction by the Ayer's spatula and cytobrush under aseptic methods, and the obtained cellular materials were quickly smeared on a clean glass slide. Slides were fixed with absolute alcohol and were stained with Pap stain. Slides were examined under the light microscope and reporting was done by cytopathologists as per the 2001 Bethesda system. Data on patient's clinical details were collected from patient's case notes & cytopathologic findings from slide archive. All patients aged more than 21 years were included in this study. Pap smears taken on post hysterectomy patients and already known cases of carcinoma cervix were excluded. The data were compiled in a structured proforma and analyzed.

## RESULT:

A total of 5050 Pap smears were examined. Maximum number of patients (3161/5050 = 62.7%) were in the age group of 31–50 years [Table 1]. Majority of the patients were presenting with the chief complain of vaginal discharge (62.8%:3176) followed by lower abdominal pain (25.2%:1276) and postmenopausal bleeding (8.4%:425), and 3.7%:188 of the patients were attending the clinic for a normal routine check-up. The findings of pap smears were broadly classified into two groups such as unsatisfactory smears and satisfactory/adequate smears. There were 342 (6.7%) unsatisfactory smears and 4703 (93.1%) adequate smears. The unsatisfactory or inadequate smears were due to either paucity of squamous cells, excess blood, or heavy inflammation obscuring squamous cells.

**Table 1: Age-wise distribution of cases**

| Age group | Total number of cases (%) |
|---|---|
| 21-30 | 828 (16.3) |
| 31-40 | 1676 (33.1) |
| 41-50 | 1495 (29.6) |
| 51-60 | 662 (13.1) |
| >60 | 389 (7.7) |
| Total | 5050 (100) |

Negative for intraepithelial lesion or malignancy (NILM) was reported in 97.4% of all the adequate smears and 90.8% of the total smears taken for the study. Out of all theNILM cases, majority cases (94.8%, i.e., 4346/4581) were reparative benign cellular reactive changes, followed by normal smears (5.01% i.e., 235/4581) [Table 2]. Out of all the benign reactive changes, majority were nonspecific inflammation followed by atrophic vaginitis and metaplasia constituting 95.8%, 3.1%, and 0.86%, respectively [Table 2]. The rate of nonspecific inflammatory positive cases was 82.8% in comparison to total smears taken.

**Table 2: Distribution of cases as per microscopic**

| Adequate pap smear | Number of cases with percentage |
|---|---|
| NILM | |
| Nonspecific inflammation | 4171 (91.2) |
| Normal | 235 (5.01) |
| Atrophic vaginitis | 143 (3.01) |
| Metaplasia | 42 (0.9) |
| Premalignant/malignant | 127 |
| ASC | 13 (10.2) |
| LSIL | 27 (21.2) |
| HSIL | 19 (14.9) |
| SCC | 65 (51.1) |
| Adenocarcinoma | 3 (2.3) |

## DISCUSSION:

Various studies around the world has shown a wide range of prevalence of cervical epithelial abnormalities from as low as 1.14% in Nepal[7] to 14.52% in Iran.[8] No consistent pattern emerged in these studies both in developed and developing countries. The prevalence of epithelial cell abnormalities varies between 1.32 to 11.95 in different regions of India, ours being 2.42%.[9,10] The reasons for these variation may be due to differences in inclusion criteria employed for diagnosis, the quality checks used, intrinsic differences in the population studied including the prevalence of risk factors and the sample size. Studies conducted in Hyderabad, [11] Ahmadabad[9] and Bhopal [10]shows a lower rate compared to us. But compared to other countries, we are far better as evident from Table 6.[11-13]

There has been a variation in the reported rate for Epithelial Cell Abnormalities (ECA) in different countries and even in different parts of the same country. In our study, ECA were noted in 116 smears (14.5 %) among the 802 smears studied which is relatively higher than similar studies performed elsewhere.[14] Among the epithelial cell abnormalities, LSIL constituted 34.5 % of cases followed by HSIL (29.3 %). ASCUS constituted 16.4 % of ECAs and 2.4 % of the total examined smears which is higher than most other studies.[14] Squamous cell carcinoma was noted in eight of 116 ECA cases (6.9%), 1.0 % of the total examined smears which is similar to various studies.

Maximum number of the patients (33.25%) attending for pap smear were in the age group of 31–40 years and was supported by Bamanikar et al., where 32.68% of the patients were in the same age range.[11][15] Majority of the patients(63%) attending for pap smear were having vaginal discharge as the chief complaint and was supported by other studies.[11,12][15,16]

According to previous studies, the most common age to develop carcinoma of the cervix is the fifth decade, and the precursor lesions occur 5–10 years before the development of invasive carcinoma.[17] However, in this study, HSIL and SCC were seen predominantly (56/75 cases = 74.7%) after 50 years of age group. The clinical behaviour of low grade lesions are unpredictable with many disappearing spontaneously or with treatment but few may also persist or progress. Since these cases have a chance for further abnormalities, a close long term follow up / surveillance of these lesions are warranted.[18]

## CONCLUSION:

It is imperative that cervical screening programs be started at an earlier age than the recent guidelines. Pap smear testing is a very useful, simple, economical and safe tool to detect preinvasive cervical epithelial lesions. The community needs to be enlightened about Pap test through diffuse educational activities. We can develop a cost-effective screening method by training medical and paramedical staff at primary health center level.

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