A Study of Cervical Pap Smears in a Tertiary Care Hospital.

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Abstract:

Background: Cancer of the cervix is the leading cancer among females of India. Cancer of cervix is readily preventable, and can be diagnosed at the pre-invasive stage with adequate and repetitive cytological screening with Papanicolaou (Pap) smears. **Objectives:** This is a retrospective study aimed to evaluate all previously conducted cervical smears examined at a teaching tertiary care hospital during one year period. **Methods:** Detailed clinical data and Pap smear cytology reports were obtained and data noted in a structured proforma. All the smears were reported as per the 2001 Bethesda system. **Results:** A total of 1436 Pap smears were examined. Maximum number of patients was in the age group of 31 – 40 years (fourth decade). There were 133(9.2%) unsatisfactory or inadequate samples. A total of 1187 smears were reported as Negative for Intraepithelial Lesion or Malignancy (NILM) and 390(22.7%) were inflammatory. Out of a total of 1436 Pap smears, only 116(8.0%) cases were reported to have epithelial cell abnormality. The 116 abnormal cases comprised of 36 cases with ASC-US, 27 cases of LSIL, 36 cases of HSIL, 7 cases of invasive squamous cell carcinoma. **Conclusion:** Premalignant and malignant lesions of cervix can be diagnosed easily by Pap smears. The epithelial cell abnormality rate in our study was 8.0%.

Keywords: Cervical cytology, Pap smear, Screening, Squamous Intraepithelial Lesion (SIL)

Introduction:

Cervical cancer is the second most common cancer in women worldwide after breast cancer, and in developing countries, the leading cause of death by cancer[1]. Cervical cancers in the early stage of development, or carcinomas in situ, are highly treatable because the cancer cells are located in a layer of cells in or around the cervix and have not spread to other parts of the body. Once the cancer cells metastasize to other parts of the body the disease is more difficult to treat and cervical cancer treatment becomes more complex[2].

The Papanicolaou (Pap) smear was introduced in 1941 and became the standard screening test for cervical cancer and premalignant lesions[3]. Originally, the term Pap smear was used for smears made out of posterior fornix material for purpose of detection of cancer and pre-cancer lesions. But presently, the term is used for smear made from material collected from vagina, endocervical canal, ectocervix or vaginal vault. The randomized examination of cervical PAP smears in women with vaginal discharge showed that cervical infections, intra epithelial neoplasia of various grade and

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invasive cervical carcinoma are much more common in India as compared to the Western countries. The possible reason for this fact is the absence of cervical screening program, low social-economic status, and lack of awareness of cervical cancer prevention by PAP smears[4]. The simplicity, effectiveness and versatility of Pap test have made it an integral part of routine clinical examination and large chunk of workload in gynecological and pathological practice is due to this test[5].

Aims and Objectives

The aim of our study is to evaluate the

1. To explore various lesions of uterine cervix (inflammatory and neoplastic)
2. To find out target age group in which screening effort scan be concentrated for early detection as well as reduction of incidence of cervical cancer, in our setup.

Material and Methods

In this Retrospective Study, we have conducted Pap test in 1436 female at Cytology Laboratory, Dept. of Pathology, P.D.U. Government Hospital, Rajkot, Gujarat with prior consent between August 2015 to July 2. Sampling Technique is systemic random sampling.

All women coming to gynaecology OPD between the ages of 21 to 60 years consenting for Pap smear were included in the study. Those who presented with excessive white discharge per vagina, bleeding per vagina, irregular menstruation, pelvic pain and dyspareunia were considered as symptomatic.

Before taking Pap smear, it was ensured that no local douche, antiseptic cream and no local internal examination was done on day of test. The patient was placed in dorsal lithotomy position and a Cusco's bivalve speculum was introduced through vagina and cervix was visualized. The longer projection of the Ayre's spatula was placed in the cervix near squamo-columnar junction and rotated through 360 degree[6].

The cellular material thus obtained was quickly, but gently smeared on a clean glass slide. Two smears were prepared for each case. The glass slide was then immediately put into the coplin jar containing 95% ethyl alcohol (fixative), stained by Papanicolaou stain. The cytological interpretation of smears was made under light microscope according to the New Bethesda System 2001. The epithelial cell abnormalities particularly the squamous epithelial abnormality has been categorized into atypical squamous cells (ASC) including ASC of undetermined significance (ASC-US) and ASC, cannot exclude high grade squamous intraepithelial lesions (ASCH) and squamous intra epithelial lesion (SIL). SIL was again subdivided into low-grade squamous intraepithelial lesion (LSIL) and high-grade squamous intraepithelial lesion (HSIL). Frank invasive malignancy was termed as squamous cell carcinoma. Similarly, glandular cell abnormalities were categorized into atypical endocervical cells not otherwise specified, atypical endometrial cell not otherwise specified and atypical glandular cell not otherwise specified. Those with HSIL were counselled and were advised to undergo colposcopic examination and biopsy for histopathological examination.

Explanation of unsatisfactory specimen:

- Scanty cellularity
- Poor fixation
- Partially or completely obscuring inflammation
- Partially or completely obscuring blood

Result:

A total of 1436 cases were analyzed during a period of one year. Most of the women were in age group 31 – 40 years (Table 1)

Table 1: Age wise distribution of total number of patients

Age Group (years)	No. of cases	Percentage
21-30	290	20.19
31-40	445	30.99
41-50	346	24.09
51-60	212	14.76
61-70	112	7.799
71-80	28	1.95
>80	3	0.209
Total	1436	100

As per as the patients presenting complain was concerned, vaginal discharge was commonest followed by lower abdominal pain and postmenopausal bleeding. The Pap smears were adequate and there was no other non-neoplastic or glandular cell abnormality noted apart from epithelial cell abnormality in 116 (8.0%) of the cases.

Morphology of epithelial cell abnormalities:

LSIL: Low Grade Squamous intraepithelial Lesion

- Intermediate sized cells
- Nuclear atypia:
  - Enlargement
  - Irregular contour
  - Hyperchromasia
  - Slight chromatin coarseness
- Koilocytes

HSIL: High Grade Squamous intraepithelial Lesion

- Parabasal sized cells
- Discrete cells or syncytial groups (hyperchromatic crowded groups)
- Nuclear atypia
  - Enlargement
  - Markedly Irregular contour
  - Usually marked hyperchromasia

     o Marked chromatin coarseness

SCC: Squamous cell carcinoma

- HSIL features plus,
  - Macronuclei
  - Irregular chromatin distribution
  - Tumor diathesis
- 'Tadpoles', Caudate and 'fiber cells' (Keratinizing type)

All other smears were either within normal limit or mild acute inflammatory cell infiltration. 133(9.2%) smears were found to be unsatisfactory for evaluation. A total of 1187 smears were reported as Negative for Intraepithelial Lesion or Malignancy (NILM) and 390 (22.7%) were inflammatory. Trichomonas infection 4 (0.2%) cases. The 116 abnormal cases comprised of 36 (2.5%) cases with ASC-US, 27 (1.8%) cases of LSIL, 36 (2.5%) cases of HSIL, 7 (0.4%) cases of invasive squamous cell carcinoma.

Table 2: Findings of pap smear cytology

Age Group (in years)	NILM					ASCUS	AGUS	HSIL	LSIL	US	SCC	Total
	Normal	INFL	TV	BACT	HERPES							
21-30	159	81	0	2	1	2	0	1	0	14	0	260
31-40	307	173	1	5	0	10	3	3	4	44	2	552
41-50	188	66	1	1	2	13	2	7	8	30	2	320
51-60	77	43	1	1	0	8	1	8	7	25	3	174
61-70	36	21	1	1	0	3	3	14	5	15	0	99
71-80	10	6	0	0	0	0	1	3	3	5	0	28
>80	3	0	0	0	0	0	0	0	0	0	0	3
Total	780	390	4	10	3	36	10	36	27	133	7	1436

INFL-Inflammatory smear, TV- Trichomonas Vaginalis, BACT-Bacterial Vaginosis, US-Unsatisfactory, SCC-Squamous cell carcinoma
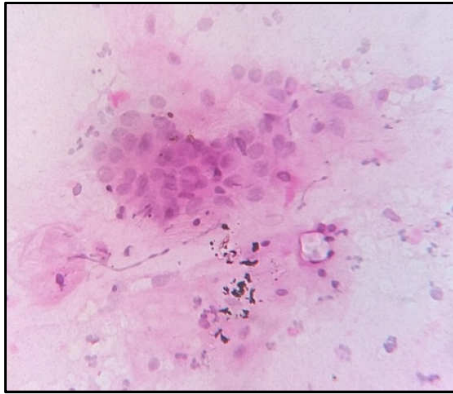
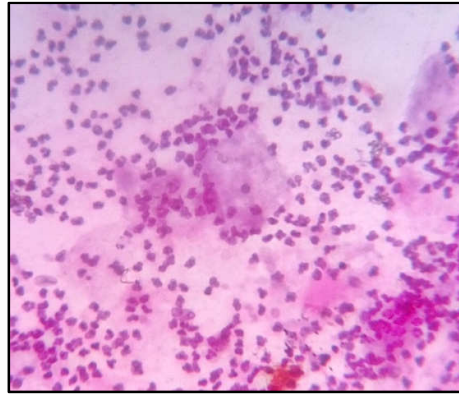**Image 1: Squamous cell carcinoma [40X], Right lower inset - Caudate cell variant**
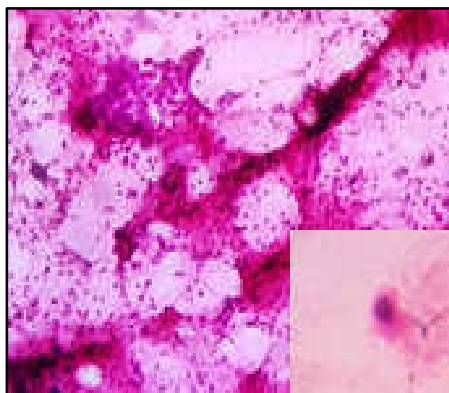
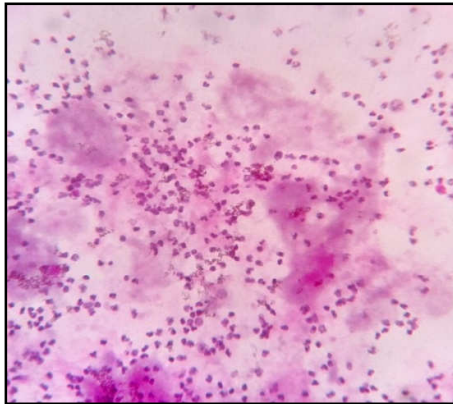**Image 2 High grade Squamous Intraepithelial Lesion [40X]**
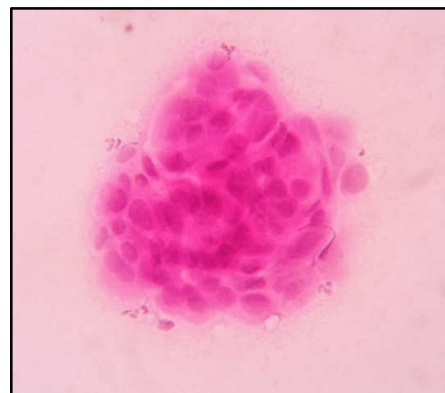
**Image 3 Low grade Squamous
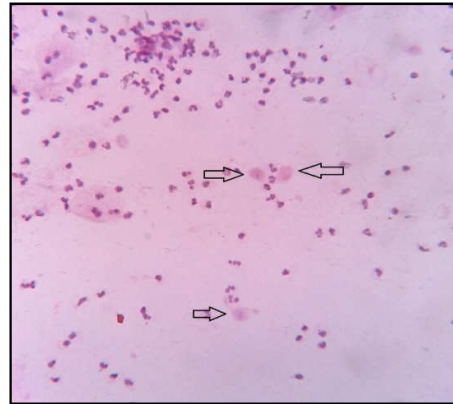Intraepithelial Lesion [40X]**

**Image 4 Bacterial Vaginosis
Showing Clue cells [40X]**

**Image 5 Bacterial Vaginosis
Showing Acute inflammatory cells [40X]**

**Image 6 Trichomonas Vaginalis
[10X]**

Discussion:

This study determines 1187 cases (82.6%) of negative for intraepithelial lesion or malignancy with non-specific inflammation 390 cases (27.1%) and 50% of NILM cases. Other studies revealed 95% and 74.3% cases of NILM respectively[7].The Epithelial Cell Abnormality (ECA) rate, that is the total of ASCUS, LSIL, HSIL, and carcinoma diagnosis varied between 1.5 and 12.60% in various studies. The ECA rate of 8.0 % in our study was comparable to those reported in literature. Out of 116 neoplastic cases, 32 cases (27%) were in 41-50 years age group. In our study, the age group with most patients with abnormal smears was 41-50 years. Similar finding was detected by other studies[8]. A recent study conducted in Ningen Dock, Japan aimed to determine the gynaecological status of asymptomatic women who attended the hospital for health check-up, showed low prevalence cervical cell abnormalities of 1.2% [9]. The explanation behind this result is mostly because of their cultural traditions and great concern regarding their health check-ups and less likelihood of having multiple sexual partners.

Our study revealed ASCUS 36(2.5%) and HSIL 36(2.5%) to be the most common epithelial cell abnormality. Similar results were obtained in other studies which also concluded ASCUS to be the most common epithelial cell abnormality[10]. In our study

1.88% had Low-grade Squamous Intraepithelial Lesion (LSIL), and 2.5% had high-grade Squamous Intraepithelial Lesions (HSIL). Study from Saudi Arabia had 4.9% of cases were diagnosed with SIL[11]. In our study, the age group with most patients with abnormal smears was 41-50 years. Similar finding was detected by other studies[8]. Our study thus elucidates the importance of cervical screening test. Community health awareness campaigns and large scale Pap screening programs for women should be undertaken.

Conclusion:

Cervical cancer is one of the most common malignancies in women of developing country like India. Pap smear is a simple, cheap, safe and practical diagnostic tool for early detection of cervical cancer in high risk group population; so it should be established as a routine screening procedure. It also has a greater role in diagnosis of inflammatory lesions including the identification of causative organism, atrophic changes, changes of radiation therapy and some rare tumors. As the most number of neoplastic lesions were observed in 41-50 years of age (27% of all neoplastic lesions), It is recommended that at least a single life-time pap screening cytology of uterine cervix of all the women aged 40 to 50 years.

References:

1. National Cancer Registry Program. Annual Report. IC New Delhi; 1990-1996.

2. Papanicolaou, GN, Traut, HF. The diagnostic value of vaginal smears in carcinoma of the uterus. *Am Jr ObstetGynecol* 1941; 42:193-205.

3. Mintzer M, Curtis P, Resnick JC, Morrell D. The effect of the quality of Papanicolaou smears on the detection of cytological abnormalities *Cancer* 1999; 87:113-7.

4. Anderson and Jones: false positive cervico-vaginal cytology. *acta cytol* 41(6): 267, 1997

5. George Burkadze, Gulisa Turashvili: Cytology interpretations of cervical Pap smears in Georgia. The Internet Journal of Gynecology and Obstetrics. 2004; 3:2.

6. Banik U, Bhattacharjee P, Ahamad SU, Rahman Z. Pattern of epithelial cell abnormality in Pap smear: A clinic-pathological and demographic correlation. Cytojournal 2011; 8:8.

7. Solomon D, Davey D, Kurman R, Moriarty A, O'Connor D, Prey M, et al.The 2001 Bethesda System: terminology for reporting results of cervical cytology. JAMA 2002; 287:2114-9.

8. Turkish Cervical Cancer And Cervical Cytology Research Group: Prevalence of cervical cytological abnormalities in Turkey. Int J Gynaecol Obstet. 2009; 106:206-9.

9. Imai A, Matsunami K, Takagi H, Ichigo S. Trend of Incidence in Positive Cervical Smears from 2002 - 2010 in Ningen Dock, a Special Japanese Health Checkup System. Ningen Dock 2012; 26:923-6.

10. Kapila K, George SS, Al-Shaheen A, Al-Ottibi MS, Pathan SK, Sheikh ZA, et al. Changing spectrum of squamous cell abnormalities observed on papanicolaou smears

in Mubarak Al-Kabeer Hospital, Kuwait, over a13-year period. Med PrincPract2006; 15:253-9.

11. Ghaith JE, Rizwana BS. Rate of Opportunistic Pap smear Screening and Patterns of Epithelial Cell Abnormalities in Pap Smears in Ajman, United Arab Emirates. Sultan Qaboos Univ Med J. 2012; 12(4):473-8.