



## STUDY OF CERVICAL CYTOLOGY PATTERNS BY PAP SMEAR AMONGST WOMEN IN REPRODUCTIVE AGE GROUP.

### Obstetrics & Gynaecology

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### ABSTRACT

**Background:** Worldwide cervical cancer comprises approximately 12% of all cancers in women with 1,22,844 new cases reported annually in India. Cervical cancer is preceded by intraepithelial histological changes. Pap smear can be utilised as a tool for cytological analysis of cervix, early identification of risk factors and pre invasive lesions of cervix. **Objectives:** To assess the incidence of different specified outcome of Pap smear in reproductive age population and its correlation with age, parity, socioeconomic status, clinical symptoms and visual impression of cervix. **Methods:** This study was conducted in women attending OPD of Gynecology at Alluri Sitarama Raju Academy of Medical Sciences and Hospital, Eluru, AP in which 300 women of reproductive age were screened by Pap smear during the period from September 2018 to March 2020. **Results:** The incidence of premalignant and malignant lesions of the cervix was 7%. Cervical cytology was normal in 88%, ASCUS in 5%, LSIL in 1.4%, HSIL in 0.3% and squamous cell carcinoma in 0.3%. Maximum number of patients with ASCUS and LSIL were in the age group of 35-39 years and HSIL and Squamous cell carcinoma occurred in the age group of 40-45 years. All abnormal Pap smears mainly presented with white discharge PV with irregular PV bleeding as the second most common and erosion, cervicitis as the most common clinical picture. Cervical biopsy confirmed HSIL and Invasive carcinoma cytology. **Conclusion:** In India, cytology, a low cost and easily accessible test, is the most logical screening modality although it has a very low sensitivity but detection rates could be further improved using liquid based cytology and the use of endocervicalcy to brush.

### KEYWORDS

Cervix ; Pap smear ; Screening

#### INTRODUCTION:

Worldwide cervical cancer comprises approximately 12% of all cancers in women with an incidence of five lakh new cases reported each year of which almost one fourth of it occurs in India. About 1,22,844 new cervical cancer cases are diagnosed annually in India and 67,477 cervical cancer deaths have been reported annually in India<sup>2</sup>. It is the second most common cancer in women worldwide but the commonest in developing countries like INDIA accounting for 80% of deaths<sup>3</sup>.

The incidence of cervical cancer in developed countries has dramatically reduced because of widespread use of an effective cytological screening test i.e. Papanicolaou Smear<sup>4</sup>.

To control the disease, cytological screening should be undertaken routinely and intensively<sup>5</sup>.

Before 2012 cervical cancer screening guidelines of the American College Of Obstetricians and Gynecologists (ACOG), American Cancer Society (ACS) and U.S Preventive Services Task Force (USPSTF) differed on age to start and how often to get screened for cervical cancers.

In 2012, all the three organization recommended that<sup>6</sup>.

1. Screening by Papanicolaou test (Pap) should not be used for women aged less than 21 years, regardless of initiation of sexual activity.
2. A screening interval of three years should be maintained by Pap smear for women aged 21-30years. HPV test is not recommended.
3. Women aged 30-65years should have a Pap test and a HPV test (co-testing) every 5 years or is even acceptable to have a Pap test alone every 3 years.

#### AIMS AND OBJECTIVES:

##### Aims:

1. To assess the incidence of different specified outcome of Pap smear in reproductive age population.
2. To study the incidence of various cervical epithelial abnormality such as infection, dysplasia and early cervical cancer changes in

reproductive age population.

#### Objectives:

1. To study the cervical cytology patterns and its correlation with age, parity, socioeconomic status, clinical symptoms, visual impression of cervix.
2. To study the application, scope, and importance of cervical cytology in reproductive population.
3. To further evaluate Pap smear positive women by direct cervical biopsy.

#### METHODOLOGY:

A prospective study was conducted in women of reproductive age group attending Out Patient Department of Gynecology at Alluri Sitarama Raju Academy of Medical Sciences and Hospital, Eluru, Andhra Pradesh.

Period of study: 1 Year 6 Months (from September 2018 to March 2020).

#### METHOD OF COLLECTING DATA:

##### 1. Inclusion criteria:

- 1) Women more than 21 yrs of age.
- 2) Women presenting with c/o white discharge per vagina.
- 3) Women with h/o irregular menstrual cycles.
- 4) Women with h/o post coital bleeding
- 5) Women with history multiple sexual partners.
- 6) Women with h/o sexually transmitted diseases.

##### 2. Exclusion criteria:

- 1) Pregnant/ Puerperal women.
- 2) Menstruating women.
- 3) Unmarried girls.
- 4) Women less than 21 yrs of age and more than 65 yrs of age
- 5) Treated cervical carcinoma cases.
- 6) All hysterectomised women.

#### Method

1. Naked eye examination of the cervix done after introducing Cusco's

speculum.

2. Cytologic specimen collection by using Ayre's spatula.

Procedure:

Patient put in dorsal position after emptying bladder. Per speculum examination done. Naked eye examination of the cervix was done. The cervical smear was then taken by using Ayre's spatula. The longer end of the spatula was inserted into the external Os and rotated through 360° so as to scrape the squamocolumnar epithelial junction throughout its circumference<sup>7</sup>. Care was taken to include all abnormal looking areas.

The smear was made by spreading the scraped material evenly on a glass slide. It was then fixed in fixative - 95% alcohol and ether for 15-30 minutes then sent to laboratory. The smears were stained according to modification of Papanicolaou (1942)

The smears were classified as per Bethesda System (2001)<sup>8,9</sup>

**OBSERVATIONS AND RESULTS:**

**Distribution of cases according to Types of Smears:**

Among 300 patients the study showed Normal smears in 5.0%(15) patients, Inflammatory smears in 88.0%(254), ASCUS in 5%(15), LSIL in 1.4%(4), HSIL in 0.3% (1) and Invasive Carcinoma in 0.3%(1) patients.

**Association of Type of Smears and Age:**

Majority of normal smears were seen in 35-39 years(46.7%), 21-29years predominantly had inflammatory smears. ASCUS and LSIL was mostly seen in 35-39 years with 53.3% and 75% respectively whereas HSIL and Malignancy was found in only 40-45 years age group.(No statistical significance was noted in association of age group with cytology report).

**Association of Type of Smears and Socio-Economic Status:**

Majority of Normal smears were seen in High socio economic status i.e. 13.3%, Inflammatory in low and Middle socio economic status, approx 50%, ASCUS(73.3%),and all cases of LSIL and Malignancy were found in low socio economic status. HSIL was seen in women belonging to middle socioeconomic status.

**Association of Type of Smears and Parity:**

There is a significant association with parity and type of smear. Majority of nulliparous women having normal smear, multiparous patients showing inflammatory smears, ASCUS, LSIL, HSIL and malignancy

**Table 1: Association of Type of Smears and Clinical Symptoms.**

Clinical Symptoms	Normal		Inflammatory		ASCUS		LSIL		HSIL		Invasive Carcinoma		Total	p value
	N	%	N	%	N	%	N	%	N	%	N	%		
WDPV	2	13.3	140	53.0	11	73.3	3	75.0	1	100.0	1	100.0	158	52.7
PV Bleeding	0	0.0	49	18.6	3	20.0	1	25.0	0	0.0	0	0.0	53	17.7
Pain Abdomen	4	26.7	33	12.5	1	6.7	0	0.0	0	0.0	0	0.0	38	12.7
Asymptomatic	5	33.3	17	6.4	0	0.0	0	0.0	0	0.0	0	0.0	22	7.3
U-V Descent	0	0.0	5	1.9	0	0.0	0	0.0	0	0.0	0	0.0	5	1.7
Others	4	26.7	20	7.6	0	0.0	0	0.0	0	0.0	0	0.0	24	8.0
Total	15	100	264	100	15	100	4	100	1	100	1	100	300	100

Note: \*means significant at 5% level of significance (p<0.05)

Majority of normal smears were predominant in asymptomatic women, Inflammatory smears mostly presented with white discharge per vaginum(53%), ASCUS, LSIL mainly presented with white discharge in 73.3%,75% respectively with irregular PV bleeding as the second most common presentation of abnormal Pap smear. White discharge per vagina was the predominant symptom in HSIL(0.6%) and invasive carcinoma(0.6%). There is significant association in type of smear with clinical symptoms in our study.

**Table 2: Association of Type of Smears and Clinical Impression of Cervix**

Clinical Impression of Cervix	Normal		Inflammatory		ASCUS		LSIL		HSIL		Invasive Carcinoma		Total	p value
	N	%	N	%	N	%	N	%	N	%	N	%		
Healthy	9	60.0	75	28.4	0	0.0	0	0.0	0	0.0	0	0.0	84	28.0
Erosion	0	0.0	39	14.8	8	53.3	3	75.0	1	100.0	1	100.0	52	17.3
Cervicitis	3	20.0	12	4.5	3	20.0	1	25.0	0	0.0	0	0.0	42	13.3
Hypertrophy	0	0.0	26	9.8	4	26.7	0	0.0	0	0.0	0	0.0	30	10.0
Polyp	1	6.7	4	1.5	0	0.0	0	0.0	0	0.0	0	0.0	5	1.7
Others	2	13.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	0.7
Total	15	100	264	100	15	100	4	100	1	100	1	100	300	100

Note: \*means significant at 5% level of significance (p<0.05)

Majority of Normal smears were found to be in patients with Healthy looking cervix (60%). Erosion was the main clinical finding in patients showing ASCUS,LSIL,HSIL and invasive carcinoma (15.3%, 5.7%, 1.9% and 1.9% respectively) and Chronic cervicitis was the second most common finding in ASCUS and LSIL (2.3% and 0.7% respectively). Inflammatory smears were seen with all types of cervical lesions.

**Table 3: Association of Type of Smears and cervical biopsy**

Type of Smears	N	Biopsy findings				
		Cervicitis	CIN 1	CIN 2	CIN 3	Invasive Carcinoma
Inflammatory	13	12	0	1	0	0
ASCUS	15	15	0	0	0	0
LSIL	4	4	0	0	0	0
HSIL	1	0	0	1	0	0
Invasive Carcinoma	1	0	0	0	0	1

On persistence of unhealthy cervix and inflammatory smear even after a course of antibiotics- direct cervical punch biopsy was taken. Most of these patients had cervicitis (92.3%) and 7.6% showed CIN 2. All cases of ASCUS and LSIL had infection which showed chronic cervicitis in biopsy. HSIL and Invasive carcinoma showed CIN 2 and Carcinoma as their biopsy finding.

**DISCUSSION:**

This is a prospective study, in which 300 women of reproductive age group who attended the Gynaecology outpatient department at AlluriSitaramaraju Medical College and Hospital, Eluru, from September 2018 to March 2020 were studied to know the pattern of cervical cytology by Papanicolaou smear and its incidence and correlation with various parameters. The results are discussed as follows.

**Distribution of patients according to type of smears:**

Only 5% reported to have normal smears. Majority had inflammatory smears (88%). ASCUS was seen in 5%, LSIL in 1.4%, HSIL in 0.3% and Invasive Carcinoma in 0.3% patients. Results of our study were similar to that of Gupta S et al<sup>17</sup> - ASCUS in 3.6%, HSIL in 1% and Carcinoma in 0.41%. Study conducted by Ghazal et al<sup>18</sup>, Rao S et al<sup>19</sup> also showed similar results.

**Distribution of patients according to Age and its cytological correlation:**

The age of the patients included women in reproductive age, the cutoff of 21 years as the starting age of screening<sup>6</sup> we took women in the age group of 21-45years. The largest number of patients i.e. 35.0% belonged to the age group 35 to 39years.

Majority of normal smears were seen in 35-39 years(46.7%), 21-29years predominantly had inflammatory smears. ASCUS and LSIL was mostly seen in 35-39 years with 53.3% and 75% respectively whereas HSIL and Malignancy was found in only 40-45 years age

group. Study by Pankaj Desai et al<sup>14</sup> showed similar results with mean age of 37.5 for LSIL and 41.6 years for HSIL. Study conducted by Balaha et al<sup>20</sup> showed mean age of 45yrs for ASCUS, 35.8yrs for HSIL. While Gupta et al<sup>17</sup> showed predominance of ASCUS, LSIL in less than 40 years and Carcinoma >40 years age group.

#### Distribution of patients according to socioeconomic status and its cytological correlation:

Most of the patients belonged to low socioeconomic group contributing to 52.3% patients while high income group comprised of only 10%. It was because study population was mainly from rural areas. Similar observations were noted by Singh.V.K<sup>12</sup> which showed 51.2% women and Sharma S et al<sup>69</sup> who showed 60% women were of low socioeconomic group.

In our study, majority of normal smears were seen in High socioeconomic status i.e. 13.3%, Inflammatory in low and Middle socioeconomic status, approx 50%, ASCUS(73.3%), and all cases of LSIL and Malignancy were found in low socioeconomic status. HSIL was seen in women belonging to middle socioeconomic status. Results noted by Susheela Rathiet al<sup>22</sup> and Padmanabhan et al<sup>23</sup> showed 92% of premalignant and malignant lesions in low socioeconomic group.

#### Distribution of patients according to parity and its cytological correlation:

Most of the patients are multiparous and only few are nulliparous. Sharma S et al<sup>15</sup> studied sensitivity and specificity of cytology in 50 women and it showed that majority of patients had parity more than 3 (62%). Other studies by Mukherji et al<sup>13</sup> showed 35%, Singh V.K<sup>12</sup> showed 44.1% patients having 3-5. Our study showed maximum number of nulliparous women having normal smear, abnormal Pap smear noted in multiparous women. Similar observations were made by Pankaj et al<sup>14</sup> and Susheela et al<sup>22</sup>

#### Distribution of patients according to presenting symptom and its cytological correlation-

Majority of patients presented with white discharge per vagina 52.6% which correlated well with study by Sharma S<sup>15</sup> et al who reported 52% patients with white discharge per vaginum. Joshi et al<sup>16</sup> study found 40% patients presenting with white discharge per vaginum.

Abnormal Bleeding per vagina was seen in 17.7%. Abdominal pain was reported in 12.7%, Utero-vaginal prolapse in 1.7% and 9% patients reported with symptoms of urinary disturbances, backache, itching vulva, etc.. whereas 7.3% were asymptomatic. Mukherjee et al<sup>13</sup> reported abdominal pain in 19% patients and contact bleeding in 2%. Pankaj Desai et al<sup>14</sup> found leucorrhoea as the most common symptom in patients with squamous intraepithelial lesions and post coital bleeding in squamous cell carcinoma. Chakravarthy et al<sup>10</sup> found menstrual irregularities as common symptom in dysplasia.

#### Distribution of patients according to clinical impression of cervix:

Majority of patients had congested cervix (cervicitis) i.e. 42.3% and cervical erosion was found in 17.3% patients. Healthy cervix was noted in 28% and hypertrophy in 10% cases whereas cervical polyp constituted 1.7%. Similar observations were made by Mukherjee et al<sup>13</sup>, whereas Sharma S et al<sup>15</sup> reported hypertrophy in 52% and cervical erosion in 24% cases.

Erosion was the main clinical finding in patients showing ASCUS, LSIL, HSIL and invasive carcinoma (15.3%, 5.7%, 1.9% and 1.9% respectively) and Chronic cervicitis was the second most common finding in ASCUS and LSIL (2.3% and 0.7% respectively). Inflammatory smears were seen with all types of cervical lesions. Purandare et al found most dysplasias in women with cervicitis and erosion. Padmanabhan et al<sup>11</sup> found 31.25% patients with SIL having erosion

#### Cytological correlation with cervical biopsy finding:

Patients with inflammatory smear who underwent cervical biopsy had cervicitis (92.3%) and 7.6% showed CIN 2. All cases of ASCUS and LSIL had infection which showed chronic cervicitis in biopsy. HSIL and Invasive carcinoma showed CIN 2 and carcinoma as their biopsy finding. Massad LS et al<sup>24</sup> found 77% of ASCUS cases to be non malignant.

#### CONCLUSION:

The Papanicolaou procedure is the most simple, safe and cost effective

method for early detection of cervical cancer Papanicolaou procedure is considered as a screening test, not a diagnostic test. Therefore abnormalities of the smear should be confirmed histologically by biopsy. Screening should be done every 3 years to reduce the chance of missing an early lesion.

In India, cytology, a low cost and easily accessible test, is the most logical screening modality. Detection rates could be further improved using liquid based cytology, endocervicalcytology to brush.

Hence efforts must be directed towards education of women regarding cervical cancer in order to promote awareness of malignancy and to motivate them for cytological screening in future for prevention or early detection of the dreaded disease.

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