


Original Research Article

Cervical Pap Smear Study for Screening of Pre-Cancerous Conditions of Cervix

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Abstract

Background: Carcinoma of the cervix is 3rd most common carcinoma of women. It is a leading cause of morbidity and mortality in India. About 86% of cases occur in developing countries and 88% deaths occur due to cervical carcinoma in developing countries. Pap smear is a simple, non-invasive, cost-effective tool in every Gynaecological OPD which can detect abnormal cytological findings of cervix. It can detect pre-cancerous lesions of the cervix at the earliest and effective early treatment can save women from morbidity and mortality.

Aims and objectives: To determine the prevalence of pre-cancerous conditions of the cervix in hospital to study demographic & other associated risk factors.

Materials and methods: A Hospital based cross-sectional study was conducted. This was questionnaire based study. Questionnaire was administered to 500 women attending Gynaecological OPD. The questionnaire consisted of the questions regarding the knowledge and awareness about different aspects of cervical cancer. All relevant socio-demographic parameters, detailed history, clinical examination, per speculum examination, Pap smear cytological study was done. This study was approved by Institutional ethical committee. 500 women coming to Gynec OPD with chronic discharge P/V, post-coital bleeding, Post-menopausal bleeding P/V, other menstrual abnormalities, lower abdominal pain and routine Pap smear screening between age group 18 (Or age of 1st coitus-whichever was low) till 65 years of age were included in the study. The data collected during the survey was entered in micro-soft excel and analyzed via SPSS (Statistical Package for the Social Sciences) SPSS VERSION 20.

Results: Out of 500 cases studied, 458 cases (91.6%) were satisfactory according to Bethesda System. The epithelial cell abnormalities constituted 42 (8.4%). Maximum no. of cases 210(42%) were in age group > 40 years. Co-relation of early marriage/1st coitus and increasing age with abnormal cytological findings was statistically significant (p value 0.001) along with cervical morbidity on per speculum findings. The statistically significant co-relation was found (p value 0.001) between multi-

parity (40.7%) and abnormal cervical smear findings. ASCUS was (5.4%) followed by LSIL (1.4%), HSIL (0.8%) and SCC (0.8%).

Conclusion: The study clearly shows relatively high prevalence of epithelial abnormalities in cervical Pap smear with increasing age, parity and early age at first coitus in symptomatic women with clinical lesions on per speculum findings. Effective screening with Pap smear definitely helps in early detection of Precancerous lesions of cervix Effective, frequent Pap smear screening programmes should be organised in India, even in the remotest rural areas to prevent the incidence of invasive cervical carcinoma.

Key words

Pap smear screening, Cervical cancer, Cytology.

Introduction

Carcinoma of the cervix is one of the most common carcinoma among women worldwide [1], most frequent carcinoma in women in India [2]. It is also the most common cancer in women in many parts of the world including south-central Asia [1]. It has been the most important carcinoma in women in India constituting 11-30% of all cancers in women and has become the leading cause of mortality and morbidity [3]. About 86% of cases occur in developing countries and about 88% deaths occur due to cervical cancer in developing countries [4]. Risk factors include persistent infection with high risk strains of Human Papilloma virus, other risk factors include early age at marriage, multi - parity, less spacing between pregnancies, low socio-economic status, prolonged use of oral contraceptives and smoking [5].

Women in developing countries usually present to the clinic only when they have symptoms such as pain, discharge P/V, and/ abnormal bleeding P/V [6]. The risk of cervical cancer remains high in many developing countries usually due to lack or inefficiency of existing preventive programmes. To detect abnormal precancerous cells in cervix, before patients get any symptoms, a very simple, non-invasive, cost-effective test for mass screening is used named as "Papanicolaou (Pap) smear test. It is used for the diagnosis of cervical precancerous and cancerous lesions [7]. Screening of women coming to routine Gynaecological OPD with symptoms of Pain, vaginal discharge, abnormal bleeding, If

subjected to Pap smear screening, by Bethesda System 2001 [8], will go a long way in terms of lives saved and cancer of cervix prevention. Early detection of epithelial abnormalities helps in early treatment of dysplastic epithelial changes (CIN1 to CIN III), can prevent invasive cervical carcinoma.

Aim and objectives

- To determine the prevalence of precancerous conditions of cervix (CIN I- III)in women with chronic vaginal discharge and sexually active women by screening with Pap smear in hospital based
- To find out detection rate of epithelial abnormalities of cervix
- To find out associated risk factors related to age, age at marriage/1st coitus, parity, spacing of children, socio-economic status and per speculum findings.

Materials and methods

The study was conducted in the department of Obstetrics and Gynecology. This study had been approved by the ethical committee of the institution. The study was a cross-sectional study, comprising of 500 women in age group of 18 (or age of 1st coitus- whichever was low) -65 years, coming to Gynaecological OPD, who were sexually active and with symptoms of chronic vaginal discharge, or Post-coital bleeding P/V, or Inter-menstrual bleeding P/V, or lower abdominal pain and women with no complaints but for routine cancer screening. Purpose of the

study was explained to the patients and informed written consent was taken. This was questionnaire based study. Questionnaire was administered to 500 women attending Gynaecological OPD. The questionnaire consisted of the questions regarding the knowledge and awareness about different aspects of cervical cancer. Detailed findings including age, Gravida /para, space between children, prolonged use of oral contraceptives, smoking, age at marriage/ 1st coitus, marital status, socio-economic status, detailed clinical & menstrual history, Post-coital bleeding, vaginal discharge, per speculum clinical examination, were recorded on the pre-designed, pre-structured proforma. After doing per speculum examination with cusco's speculum, Cervical scrape smears were collected using Ayer's spatula and endocervicalbrush Cervical scrapings were spread on a glass slide and dipped in Ethanol solution container. Pap smears of all the patients were collected and sent to pathology dept. The smears were stained using Papanicolaou method. The cytological abnormalities were classified according to The Bethesda System 2001 by the pathologist after examining Pap smears.

Data analysis

Data was analyzed using SPSS Version 20 (IBM, Chicago, U.S.A). To find out the association between attributes, Chi- Square test was applied and p value of <0.05 was considered to be statistically significant.

Results

500 women attending Gynaecology OPD were subjected to cervical Pap smear during the study period. It was found that out of 500 cases studied, 458 cases (91.6%) were satisfactory according to Bethesda System. The epithelial cell abnormalities constituted 42 (8.4%) of all cases. Maximum no. of cases 210 (42%) were in age group of more than 40 years, followed by age 18-25 years 84 (16.8), 30-35 years 71 (14.2%), 36-40 years 67 (13.4%), 26-30 years 58 (11.6%). The Epithelial abnormalities included 8.4% of all cases out of which ASCUS (atypical squamous

cells of undetermined origin) was 5.4%, followed by LSIL (low squamous intra-epithelial lesion) 1.4%, followed by HSIL (high squamous intra-epithelial lesion) 0.8% and SCC (squamous cell carcinoma) (0.8%). Most common age group affected by ASCUS was > 40 years of age. 2 patients showed SCC at age 31-35 years. Out of 458 normal cases, 151 were detected with cervical erosion or cervicitis. There were 42 abnormal smears out of which ASCUS (27) was most common.

Table - 1: Socio demographic profile of the participants.

| Age group (Years) | N | % |
|---------------------|------------|-------------|
| <18 | 10 | 2% |
| 18-25 | 84 | 16.8% |
| 26-30 | 58 | 11.6% |
| 31-35 | 71 | 14.2% |
| 36-40 | 67 | 13.4% |
| >40 | 210 | 42% |
| Age at marriage | N | % |
| <18 | 44 | 8.8% |
| 18-25 | 417 | 83.4% |
| 26-30 | 33 | 6.6% |
| >30 | 6 | 1.2% |
| Age at first coitus | N | % |
| <18 | 46 | 9.2% |
| 18-25 | 430 | 86% |
| 26-30 | 19 | 3.8% |
| >30 | 5 | 1% |
| Total | 500 | 100% |

The frequency of dysplasia and cervical carcinoma in relation to age is shown in **Table - 1**. The progressive rise in epithelial abnormalities was seen with increasing age and maximum frequency was seen in age > 40 years. Age at first coitus was calculated and it showed 86% women were of age group.(18-25) years, 9.2% (<18 years), 3.8% in (26-30)years with just 1% in >30 years. Relationship of early marriage/1st coitus, with cervical morbidity showed clearly that it has significant influence (p value < 0.001) on cervical morbidity. Symptoms were maximum as discharge P/V (30%), pain lower abdomen (25.6%), pruritis vulva (11.6%), post-

coital bleeding (5.6%), post-menopausal bleeding (5.2%), menorrhagia (4.6%), Dyspareunia (2.6%), Infertility (0.6%) Maximum P/S findings were of cervical erosion/ cervicitis (83.2%) in 18-25 age group followed by < 18 years. 8.8%. It showed that more the no of years of coitus, more the risk of cervical morbidity.

Table – 2: Type of reproductive tract morbidity.

| Symptom | N | % |
|---|-----|-------|
| Discharge PV | 150 | 30% |
| Pain lower abdomen | 128 | 25.6% |
| Pruritis vulva | 58 | 11.6% |
| Post-coital bleed | 18 | 3.6% |
| Discharge PV + Pain lower abdomen + Post-coital bleed | 78 | 15.6% |
| Menorrhagia | 23 | 4.6% |
| Post-menopausal bleed | 26 | 5.2% |
| Primary infertility | 3 | 0.6% |
| Dyspareunia | 13 | 2.6% |
| Something coming out from vagina | 2 | 0.4% |
| Any other | 1 | 0.2% |
| Total | 500 | |

Relationship of parity with abnormal Pap smear was analysed and it was found that multipara (4 or >4 children) were having maximum cervical morbidity (40.7%) followed by women with 3 children (18.75%), women with 1- 2 children (11.8%) Parity is also proved to be statistically significant (p value <0.001). In the study group, as only 3 women were smokers, the association of smoking with dysplasia could not be predicted. All 500 women were classified according to Kuppaswamy classification into upper, middle, lower class. Prevalence of cervical dysplasia was higher in low socio-economic group but it was not statistically significant.

Table - 1 depicts the socio demographic profile of the participants. Maximum number of study subjects belonged to the age group of >40 years. Majority of the participants got married in at the

age of 18 - 25 years. Similarly the age of first coitus was maximum in the same age group i.e. 18-25 years.

Table – 2 represents the type of reproductive tract morbidity among study subjects. Discharge per vaginum was the commonest complaint (30%) followed by symptoms like pain lower abdomen (25.6%).

Table - 3 shows the relationship of age at marriage and parity with the cervical morbidity among the study subjects. Most common per speculum finding found in all the age groups was cervical erosion or cervicitis which was prevalent commonly between the age group of 18-25 years. Early Age at 1st coitus has significant (p value <0.001) influence on cervical morbidity. Similarly parity is also significantly (p value < 0.001) associated with type of cervical morbidity. As the parity increases, cervical morbidity is also on rise.

Table - 4 shows the distribution of types of dysplasia. Most common pap smear lesion was ASCUS followed by LSIL.

Table - 5 shows distribution of dysplasia as per age groups. Most common histopathological lesion found in all the age groups was ASCUS followed by LSIL and HSIL and SCC. The most common age group affected by ASCUS was the >40 years of the age study subjects.

The **Figure - 1** shows the different types of dysplasia detected by the pap smear as per the clinical findings during the per speculum examination. Out of 458 normal cases, 151 were detected with cervical erosion or cervicitis. There were 42 abnormal smears out of which most common was ASCUS (27).

Discussion

The current study was carried out among 500 females attending Gynec OPD at a tertiary care centre. (PIMS) Most patients belonged to the age of 18 - 25 years. Majority of the participants got

married in at the age of 18 - 25 years and the age of first coitus is maximum in the same age group i.e. 18-25 years. The study shows that most common reproductive morbidity was discharge per vaginum (30%) followed by pain lower abdomen (25.6%). Similar findings were reported by Sharma P, et al. (2010) in a Community Based Study on cervical cancer screening program among women of Delhi. The most common reproductive tract morbidity in

their study was discharge per vaginum (28.5%) followed by pain lower abdomen (20.1%). Other complaints were post-coital bleeding, inter-menstrual bleeding, something coming out of vagina, menorrhagia, dyspareunia, pruritis vulva etc. [9]. These could be attributed to poor personal hygiene. These observations were further supported by Desai M, et al. (2004) in Community Based Cancer Screening Program in Vadodara [10].

Table – 3: Relationship of age at marriage and parity with cervical morbidity.

| Age at marriage | Normal | Erosion/cervicitis | Hypertrophy | Atrophy | Total | P value |
|-----------------|--------------|--------------------|-------------|------------|------------|----------|
| <18 | 29 (17.4%) | 12(5.85%) | 2 (2.27%) | 1 (2.43%) | 44(8.8%) | P <0.001 |
| 18-25 | 123 (74.09%) | 175 (85.36%) | 82 (93.18%) | 37 (2.43%) | 417(83.2%) | |
| 26-30 | 12 (7.22%) | 16 (7.80%) | 3 (3.04%) | 2 (4.87%) | 33 (6.6%) | |
| >30 | 2 (1.20%) | 2 (0.97%) | 1 (1.13%) | 1 (2.43%) | 6 (1.2%) | |
| Parity | | | | | | |
| 0 | 9 (37.5%) | 10 (4.34%) | 50 (30.86%) | 1(1.85%) | 70 (14%) | P <0.001 |
| 1 | 7 (29.16%) | 10 (4.34%) | 48 (25%) | 2(3.7%) | 67(13.4%) | |
| 2 | 4 (16.6%) | 12 (5.21%) | 40 (20.83%) | 3(5.55%) | 59(11.8%) | |
| 3 | 2 (8.33%) | 47 (20.43%) | 36 (18.75%) | 9(16.65%) | 94(18.8%) | |
| 4 | 1 (4.16%) | 60 (26.08%) | 10 (6.17%) | 17(31.45%) | 88(37.6%) | |
| >4 | 1 (4.16%) | 91 (39.56%) | 8 (4.16%) | 22(40.7%)S | 122(24.4%) | |

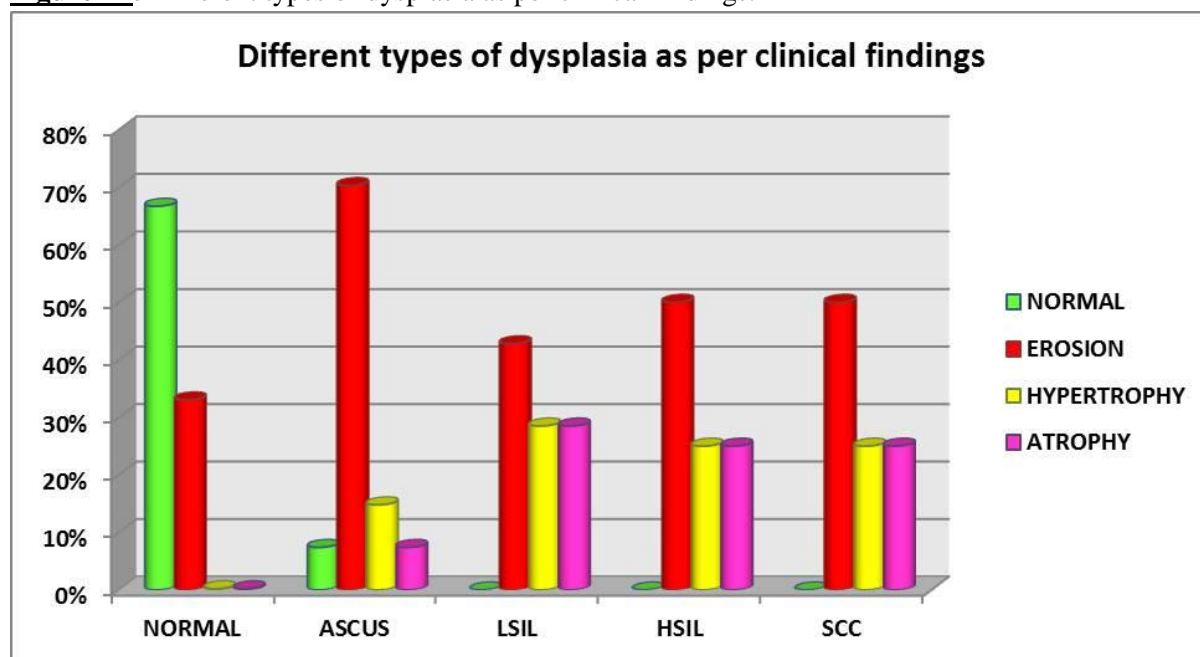
Table – 4: Types of cervical dysplasia among study subjects.

| Cytological examination | N | Percentage |
|-------------------------|-----|------------|
| Normal | 458 | 91.6% |
| ASCUS | 27 | 5.4% |
| LSIL | 07 | 1.4% |
| HSIL | 04 | 0.8% |
| SCC | 04 | 0.8% |
| Total | 500 | 100 % |

Table – 5: Distribution of dysplasia as per age.

| Age group | Normal | ASCUS | LSIL | HSIL | SCC | Total |
|-----------|--------|-------|------|------|-----|-------|
| <18 | 10 | 0 | 0 | 0 | 0 | 10 |
| 18-25 | 80 | 4 | 0 | 0 | 0 | 84 |
| 26-30 | 54 | 4 | 01 | 0 | 0 | 58 |
| 31-35 | 65 | 3 | 01 | 01 | 2 | 71 |
| 36-40 | 62 | 3 | 02 | 01 | 1 | 67 |
| >40 | 194 | 13 | 03 | 02 | 1 | 210 |
| Total | 465 | 27 | 07 | 04 | 04 | 500 |

Figure - 1: Different types of dysplasia as per clinical findings.



The present study revealed that most common per speculum finding found in all the age groups was cervical erosion or cervicitis (41%) and most common affected age group was 18-25 years. Age played a significant (p value <0.001) role in determining the type of cervical morbidity. Similarly parity was also significantly (p value <0.001) associated with type of cervical morbidity. These findings were supported by Khamankar ST, et al. (2014) in a study conducted on risk factors for cervical neoplasia among rural women of Maharashtra as in their study also, factors like age and parity were significantly associated with cervical neoplasia. In their study, age and high parity were observed to be the risk factors for cervical neoplasia on pap smear [11]. These findings were also association with study done by Gupta K, et al. (2013) on Cervical dysplasia in Western Uttar Pradesh in which it was documented that prevalence of abnormalities in cervical smears were associated with age and parity [12].

In the present study, on pap smear examination 42 (8.4%) abnormal smears revealed 27 cases with ASCUS, 7 with LSIL, 4 with HSIL and 4 with Squamous Cell Carcinoma. These observations corroborate with findings of Bamanikar SA, et al. (2014) in a study on

cervical pap smears in Pune in which out of 30 abnormal smears, most common were ASCUS type [13]. Similar trend was observed by Patel MM, et al. (2011) in a study on cervical pap smear in which ASCUS was found to be the most common epithelial cell abnormality [6].

Conclusion

The study clearly shows relatively high prevalence of epithelial abnormalities in cervical Pap smear with increasing age, parity, early age at first coitus in symptomatic women with clinical lesions on per speculum findings. Effective screening with Pap smear definitely helps in early detection of Precancerous lesions of cervix Effective Frequent Pap smear screening programmes should be organised in India, even in the remotest rural areas to prevent the incidence of invasive cervical carcinoma.

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