

## Cervical cytological studies associated with Clinical lesions of cervix in Rural women of Lucknow, India

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### Abstract

**Purpose of the study:** As the cervical lesions of cervix are supposed to harbor large number of squamous intraepithelial lesions (SIL) cases, it is essential to cytologically examine all such cases especially under rural conditions to check the development of cervical cancer. **Basic procedures and methodology:** During the ongoing rural cervical cancer screening carried out in the villages of west Lucknow, a total of 2949 women have been cytologically examined obtained from the 186 camps held between March 2013 to February 2020. Cervical lesions were present in 459 and their different types have been analyzed in relation to different risk factors of carcinoma cervix. **Important findings:** The clinical lesions of cervix present in 459 women (15.5%) were mostly associated with gynecological symptoms (75.6%) and illiteracy (72.8%). The inflammatory changes in the cervix were seen in 29.6% of the women while the SIL rate was 19.3%. Vaginal discharge was the most common gynecological symptom associated with clinical lesions followed by pain in lower abdomen and menstrual disorders. The clinical lesions were mostly seen in the younger women between 16-30 years and were associated with multiparity. **Principal conclusions:** As the SIL was associated with large number of clinical lesions of cervix, these lesions should be cytologically examined for any advent of premalignancy to check any risk of development of carcinoma cervix. This becomes more imperative in rural women as majority of them are illiterate and had shown clinical lesions at young age. Hence, there is urgent need of creating awareness regarding different risk factors and importance of cytology for early detection of cervical cancer.

**Keywords:** Clinical lesions of cervix, Inflammation, Squamous Intraepithelial Lesions, Gynecological symptoms, literacy

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### Introduction

In rural population of India, paucity of work force in cytology has led to screening by visual method tests such as VIA and visual inspection with Lugol's Iodine (VILA) and visual inspection with magnification devices- magnavisualizer (VIAM). The main advantage of visual assessment has been the immediate availability of results which permits diagnosis and / or treatment to be performed in the same sitting. The cytological screening, on the other hand, permits to detect the disease in the pre-invasive phase which can be easily treated. Cytological screening has been found to reduce the incidence of carcinoma cervix by 80% (Miller et al).[1] However, many investigators have compared VIA with cytology and have found that VIA has high sensitivity but the Pap test though has low sensitivity but a higher specificity[2-5]. Hence, it was felt that VIA was a feasible primary screening method for detecting high grade cervical intraepithelial neoplasia (CIN) and could be used at places where the Pap test was not feasible. Manisha et al. have also recommended VIA as a better screening method due to its high sensitivity, simple administration and low cost.[6]

During present rural cervical cancer screening, clinical lesions of cervix were detected in only 459 women of the total 2949 cases cytologically

examined (15.5%). A low detection rate of cervical lesions could be attributed to the fact that in the initial stages of screening, per vaginum examination was performed by the trained nurses for collecting Pap smears and they might have missed the clinical lesions in difficult cases. However, to eliminate this lacunae, experienced Residents of Gynecology Department of the College were deputed to attend the screening program. As expected, gynecological symptoms were present in 75.4% of women showing clinical lesions of cervix and 72.8% of women were illiterate. Six types of clinical lesions of cervix were seen in the present study (erosion cervix, unhealthy cervix, hypertrophied cervix, cervix bleeds on touch, cervicitis and different endocervical lesions such as cystocele, nabothian follicles). Cytological status of these six types of clinical lesions and different risk factors of the cervical cancer such as gynecological symptoms, STD infection, age and parity were analyzed in detail with different clinical lesions of cervix and the data are presented in this paper.

### Materials and Methods

Rural cervical cancer screening was initiated in May 2013 using camp approach under the auspices of Era's Lucknow Medical College and Hospital, Lucknow and till February 2020 (almost 7 years), a total of 186 camps have been organized in different villages of 3 blocks of western region of Lucknow. Out of 18600 women counseled and motivated by trained nurses (100 women/village), only 5286 (28.1%) attended the camps and Pap smear examination was taken in 2949 of these women (55.8%). On P/V examination, different clinical lesions were found to be present on the cervix in

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459 women (15.5%). Pap smears were also collected in these women and were stained in the Cytology Lab of the Department of the College. The cytological changes observed in the cervical smears were graded according to the revised Bethesda System of Classification of 2014 (Nayar et al).[7] The non-viral STDs namely *Candida albicans* and *Trichomonas vaginalis* were diagnosed on the individual presence of the organism in the cervical smears. The women of the study group have undergone Pap smear examination with their consent and the same was taken on the Pap smear form in the form of thumb impression if they were illiterate or signature if literate. The Ethical clearance for conducting the screening program was taken from the Ethical Committee of the Institute prior to its inception. All the collected data were analyzed statistically using Chi-square test with software SPSS and version 22.

### Results

The clinical lesions of cervix were present in 459 of the total 2949 women examined (15.5%). The clinical lesions were associated with gynecological symptoms in 347 of these 459 cases (75.6%) while remaining 112 were asymptomatic (24.4%). The difference as regards to the presence of symptoms between the two groups was found to be statistically significant ( $\chi^2 = 120.3$ ;  $p < 0.001$ ). Further 334 of the 459 cases were found to be illiterate (72.8%) while remaining 125 (27.2%) were literate. Here also, the difference in the education status in the two groups was found to be statistically significant ( $\chi^2 = 95.7$ ;  $p < 0.001$ ). Six types of clinical lesions were detected in the 459 women. The erosion cervix was the commonest lesion encountered (49.4%) followed by the endocervical lesions (26.5%) and the hypertrophied cervix was seen in 13.2%. The incidence of other cervical lesions like unhealthy cervix, cervicitis and cervix bleeds on touch was very low. The cytological status of the 459 women showing clinical lesions of cervix was found to be as follows-

Normal -197(43%)  
Inflammation - 136(29.6%)  
ASCUS - 37(8.1%)  
SIL -89(19.3%)

The SIL was seen in 19.3% of the 459 cases of the study group while ASCUS was noticed in only 8.1% of cases. Inflammatory smears were seen in comparatively higher number (29.6%) but majority of the women had normal smears (43%). As expected, the SIL incidence was higher in women showing advanced lesion like bleeds on touch cervix (27.2%) while with other cervical lesions, the SIL incidence ranged from 21-23% and was lowest in the endocervical lesions. The difference in the SIL rate among the different cervical lesions was statistically insignificant ( $\chi^2 = 328$ ;  $p = 0.657$ ). The ASCUS incidence was maximum with unhealthy cervix (22.2%) while with other cervical lesions, this ranged from 8-11% and was lowest with endocervical lesions (2.4%). Here also, the difference in the ASCUS rate among the different cervical lesions was statistically insignificant ( $\chi^2 = 140$ ;  $p = 0.016$ ). The inflammatory smears, as expected, were seen in 66.6% of the cervicitis cases while in others, this ranged from 33-36% and was lowest with cervix bleeds on touch (8.1%) and endocervical lesions (13.1%). The difference in the inflammation rate among the six types of cervical lesions was statistically significant ( $\chi^2 = 30.8$ ;  $p < 0.001$ ).

Non-viral STDs namely *Candida albicans* and *Trichomonas vaginalis* were commonly seen in the cervical smears of the women showing different clinical lesions of cervix (Table-1). The overall incidence of these two STDs was found to be 5.4% (25 cases) in case of *Candida* and 2.8% in the trichomonal infection. Individualwise, the *Candida* was highest under inflammatory conditions of cervix such as cervicitis (20%) and erosion cervix (8.3%) while with other lesions this was low ranging from 3.2% to 5.5%. However, the difference in the incidence of *Candida* in the different clinical lesion was statistically insignificant ( $\chi^2 = 16.3$ ;  $p = 0.006$ ). Trichomonal infection was highest in hypertrophied cervix cases (4.9%) and cervix bleeds on touch (4.5%) and was low with

other cervical lesions. No STD infection was seen in the endocervical lesions. Difference in the incidence of trichomonal infection in the different cervical lesions was statistically insignificant ( $\chi^2 = 0.016$ ;  $p = 0.944$ ).

Different gynecological symptoms were also analyzed in relation to the presence of clinical lesions of cervix (Table-2). Overall, the gynecological symptoms were present in 347 out of total 459 women showing clinical lesions of cervix (75.6%). Individually, vaginal discharge was commonly seen in cervical lesions (34.8%) followed by pain in lower abdomen (30.2%) and was lowest with menstrual disorders including bleeding (10.6%). Gynecological symptoms were present in all 9 cases of cervicitis, in 97.7% of erosion cervix cases, in 81.9% of hypertrophied cervix cases in 72.2% of unhealthy cervix cases, 45.4% in cervix bleeds on touch and was lowest with endocervical lesions (35.2%). Vaginal discharge was common with inflammatory conditions of cervix, being 66.6% with cervicitis and 45.3% in erosion cervix cases. The leucorrhea was present in 61.1% of unhealthy cervix cases and in 34.4% with hypertrophied cervix. The vaginal discharge was not so common in advanced lesions like cervix bleeds on touch (18.1%) and endocervical lesions (11.4%). The difference in the leucorrhea rate among the different cervical lesions was statistically significant ( $\chi^2 = 52.7$ ;  $p < 0.001$ ). Pain in lower abdomen was also associated with inflammatory conditions of cervix- erosion cervix (41.5%) and cervicitis (33.3%) while this was not so common with hypertrophied cervix (24.5%), cervix bleeds on touch (18.1%) and endocervical lesions (22.1%). Here also, the difference in the rate of pain in lower abdomen in the different cervical lesions was statistically significant ( $\chi^2 = 26.6$ ;  $p < 0.001$ ). The menstrual disorders were not so common and was highest in hypertrophied cervix cases (22.2%). However, the difference in the rate of menstrual disorder among the six types of cervical lesions was found to be statistically insignificant ( $\chi^2 = 16.2$ ;  $p = 0.006$ ).

Age of the women showing clinical lesions of cervix were also analyzed in relation to different clinical lesions of cervix (Table-3). While erosion cervix, cervicitis and unhealthy cervix were mostly seen in the young age between 16-30 years, hypertrophied cervix was most common in the middle aged women between 31-40 years. The advanced cervical lesions like cervix bleeds on touch and endocervical lesions were mostly seen in older women above the age of 40 years. The difference in the age groups of women showing different cervical lesions was statistically significant ( $\chi^2 = 32$ ;  $p < 0.001$ ).

Parities of the women showing different clinical lesions of cervix are shown in Table-4. All the six types of clinical lesions found in the study were commonly seen in multiparous women with three or more children. This was more evident in the endocervical lesions (90.1%). However, difference in the multiparous women in the different clinical lesions was statistically insignificant ( $\chi^2 = 30.5$ ;  $p = 0.010$ ). All the clinical lesions of cervix showed progressive rise in their incidence with increasing parity.

### Discussion

During the present rural cervical cancer screening, the clinical lesions of the cervix were detected in 459 women (15.5%) out of the total 2949 women cytologically examined. On contrary, this figure was just double in the urban screening (30.2%) where the women attending Gynecology Out Patient Department were attended by the competent gynecologists [8]. In the rural screening, on the other hand, the per vaginum examination was conducted by the trained nurses in the initial stages upto 1 year who were unable to recognize the lesions in difficult cases. In the remaining part of the screening, the junior residents of the gynecology department of the college were deputed for this purpose. Among the six different types of clinical lesions detected on the cervix during the present screening in 459 women, erosion cervix was most common (49.4%) followed by endocervical lesions (26.5%) and hypertrophied cervix (13.2%). Nikumbh et al and Rajput et al have also reported a higher incidence

of different cervical lesions mainly erosion cervix and hypertrophy in the rural women[9-10] . Jain et al have also reported similar findings in their screening in Madhya Pradesh[11] .

Cytological evaluation of cervical smears in the 459 women showing clinical lesions of the cervix in the present study revealed SIL in 19.3% of cases. The SIL rate was found to be 14.1% in the urban counterparts of Lucknow . A high SIL rate in the rural women may be due to illiteracy present in 334(72.8%) of the total 459 cases of the study group. The lack of education leads to the poor personal genital hygiene which results in vaginal infections which persist being undetected and untreated due to lack of medical amenities in the villages. As expected, the inflammatory changes in the cervix were seen in 29.6% of cases while ASCUS was seen in only 8.1% of cases. A high SIL rate was also reported in the rural population studies by Rajput et al, Nikumbh et al and Jain et al. Individual wise, the highest SIL rate was seen in the advance lesions like cervix bleeds on touch (27.2%) in the present series. The SIL rate ranged from 21-23% in the other cervical lesions. Jain et al have also found a high SIL rate in women with cervix bleeds on touch. Thus it is evident that the clinical lesions of cervix are supposed to harbor large number of SIL cases in the rural women and if such women are subjected to mandatory cytological evaluation, large number of SIL cases can be detected, the adequate treatment and follow up of such cases would check any progression of SIL to malignancy. Thus our rural study also shows the importance of clinical downstaging of cervical cancer as a frequency of SIL was

very high with clinical lesions of cervix than with the healthy cervix (19.3% as against 15.7%). However, Fonn et al have not found this correlation in their rural studies conducted in the poor countries of Africa[12].

In the present series, majority of the women showing clinical lesions of cervix were seen in the younger women between the age of 16-30 years (39.8%) followed by middle aged women (31-40 years- 31.5%) and older women beyond 40 years of age (28.5%). This may be related to the marriage at an early age which is very common in the rural population. This results in prolonged sexual activity and development of clinical lesions of cervix and associated gynecological symptoms (Misra et al)[13] .The advance clinical lesions of cervix like hypertrophy were seen in the late stage in 31-40 years of age and cervix bleeds on touch and endocervical lesions were mostly found in the older women beyond the age of 40 years. Jain et al have found large number of dysplasia in the younger women between 21-30 years. Similar findings were also obtained by Gupta et al[14] . Mhaske et al have advocated for a community based screening camps in the rural women to reduce the morbidity due to carcinoma cervix[15]. The present study revealed association of clinical lesions of cervix with multiparity. The clinical cervical lesions were present in 80.1% of the multiparous women and this was more evident in the advanced lesions like cervix bleeds on touch and endocervical lesions. Jain et al and Tapasvi et al have also reported 50-70% of cases with multiparity showing cervical dysplasia[17] .

**Table 1: STD infections seen in different clinical lesions of cervix**

Lesions	No of cases	STD infection	
		Candida albicans	Trichomonas vaginalis
Erosion cervix	227	19(8.3%)	9(3.9%)
Unhealthy cervix	18	1(5.5%)	-
Hypertrophied cervix	61	2(3.2%)	3(4.9%)
Cervix bleeds on touch	22	1(4.5%)	1(4.5%)
Cervicitis	9	2(22.2%)	-
Endocervical lesions	122	-	-
Total	459	25(5.4%)	13(2.8%)

**Table 2: Incidence of different gynecological symptoms with different clinical lesions of cervix**

Clinical lesions of cervix	No. of cases	Vaginal discharge	Pain in lower abdomen	Menstrual disorders	Total
Erosion cervix	227	103(45.3%)	93(41.5%)	26(11.4%)	222(97.7%)
Unhealthy cervix	18	11(61.1%)	2(11.1%)	-	13(72.2%)
Hypertrophied cervix	61	21(34.4%)	15(24.5%)	14(22.9%)	50(81.9%)
Cervix bleeds on touch	22	4(18.1%)	4(18.1%)	2(9.1%)	10(45.4%)
Cervicitis	9	6(66.6%)	3(33.3%)	-	9(100%)
Endocervical les-ions(Cysto-coel, Nabothian follicles)	122	14(11.4%)	22(22.1%)	7(5.7%)	43(35.2%)
Total	459	160(34.8%)	139(30.2%)	49(10.6%)	347(75.6%)

**Table 3: Age of women showing different clinical lesions of cervix**

Lesion	No. of cases	16-30 years	31-40 years	above 40 years
Erosion cervix	227	112(49.3%)	83(36.5%)	32(14.1%)
Unhealthy cervix	18	10(55.5%)	5(27.8%)	3(16.6%)
Hypertrophied cervix	61	23(37.7%)	25(40.9%)	13(21.3%)
Cervix bleed on touch	22	6(27.2%)	2(9.1%)	14(63.6%)
Cervicitis	9	5(55.5%)	3(33.3%)	1(11.1%)
Endocervical lesions	122	25(20.4%)	28(22.9%)	71(31.9%)
Total	459	183(39.8%)	145(31.5%)	131(28.5%)

**Table 4: Parity of women showing clinical lesions of cervix**

Lesions	No. of cases	Para 0	Para 1	Para 2	Para3 and above
Erosion cervix	227	6(2.6%)	21(9.2%)	32(14.1%)	168(74.1%)
Unhealthy cervix	18	1(5.5%)	2(11%)	1(5.5%)	14(77.7%)
Hypertrophied cervix	61	1(1.6%)	3(4.8%)	5(8.1%)	52(85.2%)
Cervix bleeds on touch	22	-	3(13.6%)	-	19(86.3%)

Cervicitis	9	1(11.1%)	-	3(33.3%)	5(55.5%)
Endocervical lesions	122	-	5(4.1%)	7(5.7%)	110(90.1%)
Total	459	9(1.9%)	34(7.4%)	48(10.4%)	368(80.1%)

### Conclusion

The present rural screening has revealed cervical lesions of cervix in only 15.5% of the total 2949 women examined. The SIL rate was also higher in these women in contrast to their urban counter parts. The clinical lesions were associated with gynecological symptoms in 75.4% of cases and were mostly seen in younger women between 16-30 years and was associated with multiparity. As the majority of the women of the study group were illiterate, this might be due to lack of awareness of poor personal genital hygiene leading to the persistent vaginal infections. Hence, there is urgent need of educating rural women regarding the risk factors of the carcinoma cervix and organizing rural camps for Pap smear examination through counseling and motivation of these women.

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