

Cervical Cytology Abnormalities and their Clinical Correlates of Women Attending a Tertiary Health Institution in a Tribal Area of Jharkhand, India

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ABSTRACT

Background: The second most common malignant tumor in developing countries including India is cervical cancer. Lack of awareness, asymptomatic nature of the disease, and poor health-seeking results in delayed diagnosis and bad prognosis. The present study aims to estimate cervical cytological abnormalities in women of the largest tribal part of India.

Materials and methods: About 280 women from six districts of Santhal Pargana (the largest tribal area of India) were given a Papanicolaou smear test from August to October 2022 in AIIMS Deoghar to find an infection, cervical lesions, and reactive changes. Data on the sociodemographic and reproductive characteristics of the study population was collected through a structured questionnaire. Information, education and communication (IEC) clearance was obtained. The collected data have been analyzed through statistical package for social studies (SPSS).

Results: The study results show the presence of abnormal cervical cytology to be 9.3% of the study population. Out of 280 participants, 23 (8.2%) showed normal cytology and 232 (82.9%) were inflammatory. A diagnosis of atypical squamous cells of undetermined significance (ASC-US) was present in 18 (6.4%) cases, atypical glandular cells (AGC) in 3 (1.1%), and 5 (1.8%) patients had a low-grade squamous intraepithelial lesion (LSIL) exhibiting koilocytic atypia. White discharge per vagina and poor hygiene were associated significantly with abnormal cervical cytology.

Conclusion: Abnormal cytology was found in 9.3% of the participants and a history of white discharge per vagina and poor hygiene were significantly associated. Regular screening and educating them on clinical features and hygiene helps to prevent cancer of the cervix among them.

Keywords: Cancer cervix screening, Cervical cytology, Histopathological examination, Jharkhand, Pap smear, Tribal.

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INTRODUCTION

In developing countries compared to developed countries cervical cancer is more prevalent. After breast cancer, cervical cancer is the second most common cancer in India.¹ It is the fourth most prevalent form of cancer in women worldwide, it accounts for 6.9% of newly diagnosed cases with an estimated 34,2000 deaths and 60,4000 patients in 2020.² According to the cervical cancer profile WHO, India contributes to approximately 6–29% of all cancers in women. In the last 5 years, less than 1 in 10 women have been screened for cervical cancer.²

Worldwide, a large majority of cervical cancer (9–13%) is due to the human papillomavirus (HPV).^{2,3} HPV 16 and HPV 18 contribute to 71% of cases of the projected 60,4000 new cervical cancer cases per year worldwide, while HPV types 31, 33, 45, 52, and 58 accounts for another 19% of cervical cancer cases.^{4,5} The incidence and mortality of invasive cervical cancer have dramatically decreased since the Pap test was introduced worldwide.⁶ Early stages of illness are typically asymptomatic but can still be diagnosed with effective screening tests such as Pap smears.⁷ Santhal Pragna is the biggest tribal area of India and in this region, most people are unaware of cervical cancer, and its screening program. Human papillomavirus DNA testing is also not available in this region, so we started screening with Pap tests to assess the cervical cytology abnormalities, to strengthen strategies for continued early detection of cancerous and precancerous lesions of the cervix, and also for deliver behavior change communication messages among these tribal populations. To considerably reduce this burden

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among high-risk women residing at Santhal Pargana, this would be an appropriate step for planning, developing, and delivering interventions.⁸ No study regarding abnormal cervical cytology has been documented in literature till now in this largest tribal area of India. Hence this study is proposed which can be a pilot project to know more about women's health issues in this region, and hence it will help the healthcare system to provide proper interventions.

MATERIALS AND METHODS

Study setting, design, and duration: It is a hospital-based analytical cross-sectional study done among the people residing in the tribal predominant area known as Santhal Pargana, one of Jharkhand's divisions. Its headquarters is located at Dumka. The six districts that make up this administrative division at the moment are Godda, Deoghar, Dumka, Jamtara, Sahibganj, and Pakur. The study happened at the outpatient department (OPD) setting of the Obstetrics and Gynecology Department of AllMS, Deoghar, India from 15 August 2022 to 15 October 2022.

Study Population

Women who gave consent for being part of the study. Samples of consented women were taken from the age of 30–65 (25 onwards with HIV) years old sexually active irrespective of their marital status and presented with abnormal vaginal discharge, post-menopausal bleeding, post-coital bleeding, multiple sexual partners, intermenstrual bleeding, unhealthy-looking cervix, a lesion that bleeds on touch, smokers, dyspareunia, pain in the lower abdomen.^{9,10}

Women who are not willing to participate in the study, with known cases of cancer cervix, with previously treated cases of cancer cervix, pregnant women, inadequate material, and atrophic smears were not included in the present study.

Sample Size and Sampling Technique

A total of 280 eligible women was included in the study (280 out of the planned 300 samples were collected accounting for 93.3% coverage. Thus, it didn't affect the power of the study). Participants were enrolled in the study using the complete enumeration method.

Brief Procedure

Under the proper aseptic condition, after obtaining proper consent, the study participants were kept in a dorsal lithotomy position. In order to visualize the cervix, a Cusco's bivalve speculum was inserted through the vagina. Ayre's spatula's longer projection was inserted into the cervix close to the squamocolumnar junction and rotated 360°. The cellular substance thus obtained was immediately and gently smeared on a clean glass slide. In a Coplin jar, the glass slide was immediately placed and the smear was fixed with 95% ethyl alcohol. The smears were prepared, and they were stained using Papanicolaou's method. The New 2014 Bethesda system was used to analyze the smear's cytological data. A pilot-tested, face-validated structured semi-structured questionnaire was used to gather information. It was prepared based on the review of literature and discussion with experts on the subject.

Study Variables

Sociodemographic details (age, background, occupation, education, socioeconomic status, marital status); Age at menarche; Age at first pregnancy; Hygiene; Family history of cervical cancer; Chief complaint; Parity; Substance use; Use of contraceptives; History of multiple sexual partners; and HPV vaccination.

Statistical Analysis

Data generated were tested for completeness and were analyzed using the Statistical Package for Social Studies (SPSS) v25.0. The Chi-square test is performed to examine and compares the observed and expected results in the tested population.

Table 1: Sociodemographic details of the study participants (N = 227)

| Characteristics | n (%) / Mean (SD) |
|----------------------|-------------------|
| Age in mean (SD) | 37.3 (7.1) |
| Occupation | |
| Homemaker | 260 (92.9) |
| Skilled worker | 12 (4.3) |
| Unskilled worker | 5 (1.8) |
| Education | |
| Illiterate | 23 (8.2) |
| Primary | 38 (13.6) |
| Middle | 83 (29.6) |
| Higher | 94 (33.6) |
| Graduate | 39 (13.9) |
| Residence | |
| Urban | 87 (31.1) |
| Rural | 185 (66.1) |
| Socioeconomic status | |
| BPL | 134 (47.9) |
| APL | 146 (52.1) |
| District | |
| Deoghar | 163 (58.21) |
| Dumka | 36 (12.8) |
| Godda | 13 (4.6) |
| Others | 68 (24.2) |

RESULTS

The sociodemographic details of the participants of this study are shown in Table 1. The most common presenting complaint was white discharge per vagina present in 140 (50%) patients. History of pain in the lower abdomen was present in 135 (48.2%), inter-menstrual bleeding in 47 (16.8%), and 21 (7.5%) patients had complaints of dyspareunia. Rest 77 (27.5%) were having other symptoms like blood-stained discharge, burning micturition, anxiety for issues, itching, foul-smelling discharge, and recurrent pregnancy loss. Only three patients (1.1%) presented with post-menopausal bleeding.

Among 280 patients, twenty-six were found to have abnormal cervical cytology (Table 2). Moreover, 254 smears were negative for any intra-epithelial lesion or malignancy, 23 (8.2%) showed normal cytological findings and 231 (82.5%) were inflammatory. Out of 231 inflammatory smears, 201 (71.7%) showed nonspecific inflammation, rest 30 (10.7%) had evidence of candida, bacterial, and Trichomonas infections. Diagnosis of atypical squamous cells of undetermined significance (ASC-US) was made in 18 (6.4%) cases. Atypical glandular cells (AGC) were seen in 3 (1.1%) cases, and 5 (1.8%) patients had a low-grade squamous intraepithelial lesion (LSIL) exhibiting koilocytic atypia in most of the smears.

The mean age of cases with LSIL was 41.4 years and those with AGC and ASC-US were 45.37 and 35.11 years respectively. There was sequential progression in the development of ASC-US and AGC to LSIL with advancing age. Moreover, the mean age at marriage for patients with LSIL, AGC, and ASC-US lesions were less than 19.5 years, 20 years, and 20 years, respectively. The patients who were having any sort of cervical epithelial abnormality were

Table 2: Categorization of cytodiagnosis among study participants (N = 280)

| Characteristics | n (%) |
|------------------|------------|
| NILM (n = 254) | |
| (a) Normal | 23 (8.2) |
| (b) Inflammatory | |
| Bacteria | 15 (5.9) |
| Candida | 12 (4.7) |
| Trichomonas | 3 (1.1) |
| Non-specific | 201 (79.1) |
| ASCUS | 18 (6.4) |
| AGC | 3 (1.1) |
| LSIL | 5 (1.8) |

ADC, adenocarcinoma; AGC, atypical glandular cells; ASC-US, atypical squamous cells of undetermined significance; HSIL, high-grade intra-epithelial lesion; LSIL, low-grade intraepithelial lesion; NILM, negative for intraepithelial lesion or malignancy; SCC, squamous cell carcinoma

Table 3: Association between clinical characteristics and cervical cytological abnormalities among study participants

| Characteristics | Cervical cytological abnormalities | | χ^2 , DF | p-value [#] |
|---|------------------------------------|------------|---------------|----------------------|
| | Yes n (%) | No n (%) | | |
| Parity | | | | |
| 0 | 13 (100) | 0 | 22.6, 2 | <0.001* |
| 1–3 | 11 (5.3) | 195 (94.7) | | |
| >3 | 15 (25) | 45 (75) | | |
| Patient with a history of white vaginal discharge | | | | |
| Yes | 20 (14.3) | 120 (85.7) | 8.31, 1 | 0.003* |
| No | 6 (4.3) | 134 (95.7) | | |
| Hygiene | | | | |
| Good | 13 (7.3) | 13 (13.3) | 2.633, 1 | 0.081 |
| Poor | 165 (92.7) | 85 (86.7) | | |

χ^2 , Chi-square; DF, degree of freedom; [#]p-value based on Chi-square test; *Statistically significant (p < 0.05)

parous. Of the participants among whom epithelial abnormalities have been detected most of them had a parity of more than 3 (16 out of 26, i.e., 61.5%) in the present study, a significant association has been found between parity and prevalence of cervical cell abnormalities among the participants (Table 3). And it has been observed that with the increase in parity, the prevalence also increases. The most common presenting complaint associated with LSIL, AGC, and ASC-US was vaginal discharge (50%) followed by lower abdominal and back pain (45.5%). The most common clinical lesion seen in patients with LSIL and AGC was cervical ectropion followed by inflammation and bleeds on touch. Very few of them had healthy-looking cervix.

DISCUSSION

The prevalence of cervical cell abnormalities in our study was 9.3%. In rural parts especially in tribal areas of India, there is a lack of awareness of menstrual hygiene, early marriages, and frequent

childbirths and it is very common. India is at a pivotal point in its efforts to prevent and treat cervical cancer, and a comprehensive strategy is required to hasten the disease's eradication. Along the way, there will be many obstacles to overcome, such as supply and delivery issues with vaccines and screening tests, issues with human resource capacity, and infrastructure, and issues related to the expansion of invasive cancer diagnostics, treatment, and supportive and palliative care services.¹¹

PL Sachan et al. conducted a study on a total of 1650 women who were sexually active and found that white discharge was the most common symptom (36.96%) followed by abdominal pain (25.63%) and irregular menses (12.78%) in their study. The most common presenting symptoms in our study were also white discharge from the vagina in 50% of cases followed by abdominal pain in 48.2% of cases, and irregular menstrual pattern in 16.8% of patients. However, the slight difference between both results may be due to different inclusion and exclusion criteria.¹²

Bal et al. conducted the study on 300 women and found the mean age of cases with a LSIL was 32.3 and those with a high-grade squamous intraepithelial lesion (HSIL) were 40.5 years. In our study also Among 26 patients with epithelial abnormality, the maximum positive cases were observed in ages between 30 and 40 years, i.e., 20/26 (76.9%) followed by 40–50, i.e., 4/26 (15.38%).¹³ It might be due to women being sexually active during these ages, low birth spacing has been observed in these women and pregnancy is a high-risk state for any infection. After all cervix of a woman of reproductive age is considerably larger than that of postmenopausal and nulliparous women hence more surface area is available for infection. The incidence was lesser in the higher age group which may be related to a lesser number of participants in those groups due to dependence and mortality. Shanta et al. conducted a retrospective study on 200 women and found that socioeconomic factors such as poor education and low socioeconomic status are important determinants of cancer cervix.¹⁴ As per our study, epithelial abnormality is also more common in low socioeconomic class, poorly educated patients, and among high parity patients.

A study by Prabhakar and Menon that looked at the association between age at marriage and cervical cancer came to the conclusion that marriage at a younger age increases the chance of developing the disease. An increase in marriage ages varying from 14 to 18 years has been observed during the past eight decades. As a result, invasive cervical cancer incidence has decreased by 6.3%, which is a considerable decrease in the incidence of cervical cancer.¹⁵ The majority of our patients that is 121 (43.68%) were married before the age of 15 years followed by 110 (39.71%) patients married between the ages of 16 and 20 years while 46 (16.6%) patients were married after the age of 20 years. The major reason for the increased incidence of cancer cervix among those who married early was due to their early onset of sexual activity and their increased duration of sexual life. This results in an increase in the probability of HPV virus exposure and hence increased infection and increased incidence of cervical malignancies. In addition to it, there are several other risk factors that can result in an increased incidence of gynecological illness and death namely malnutrition, improper menstrual hygiene, and already existing sexually transmitted infections including Human immunodeficiency virus infection.¹⁶

Under the International Agency for Research on Cancer (IARC), Muñoz et al. conducted a multicenter case-control study on a total of 436 cases of histologically confirmed invasive cervical cancer and 387 randomly selected population controls. The study revealed



that increasing parity results in a higher incidence of squamous-cell carcinoma of the cervix among HPV-positive women.¹⁷ The possible reasons for the high incidence in the current study could be due to the lower educational and economic status, early marriage, increased fertility, and improper hygiene. As explained earlier participants with increased duration of sexual activity and more childbearing are associated with HPV infection and cause cervical cytology abnormalities and ultimately cancer cervix.

Our findings in this study suggest the significant presence of cervical cytology abnormalities in this largest tribal area of India. However, the main limitations of this study were the limited sample size and short study duration. Due to the lack of awareness and limited resources in this largest tribal area of India, we have to do more awareness programs for cancer screening and HPV vaccination and we have to start HPV-DNA testing as early as possible.

CONCLUSION

In the present study, cervical cytology among women from the Santhal Pargana of Jharkhand has been investigated. Abnormal cytology was found in 9.3% of the participants and a history of white discharge per vagina and poor hygiene were significantly associated. Cervical cell abnormalities are not uncommon in this region. Regular screening with a pap smear, a simple, safe, and cost-effective tool, and educating them on clinical features and hygiene helps to prevent cancer cervix among them.

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