

Screening for cervical dysplasia and reproductive tract infections in Kerala, India: A multicentric study

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ABSTRACT

Background: Cancer of the uterine cervix is estimated to be the second most frequently occurring malignancy among females in India. Cancer mortality profile in India estimates that 20.7% of cancer deaths in females are cervical cancer. This well elucidates the fatal aspect of the disease and the need for early detection. **Aims:** To screen for cervical dysplasias and reproductive tract infections in various parts of Kerala, India, and determine its associated factors. **Methods and Methodology:** This was a descriptive cross-sectional study conducted in various parts of Kerala, India. This study included an interview schedule to collect data and the procedures included per speculum examination along with a Pap smear test. **Results:** A total of 199 women were screened with mean age of 45.87 ± 9.84 years. Of these, 13.5% showed inflammatory smears, 1% showed infective pathology and 1.5% showed pre-malignant lesions. **Conclusion:** The increased rates of inflammation and infection show its importance in public health. Similar community-based screening as well as routine screening by physicians/gynaecologists is recommended for early detection of cervical cancer and reproductive tract infections. Community education among the population proves to be an important factor; especially regarding HPV vaccination.

Keywords: Cervical dysplasia, Pap smear screening, reproductive tract infections

Introduction

A decade ago, cervical cancer topped the list for the most common malignancy among females worldwide. However, statistics now show that it has been pushed down to the fourth most occurring malignancy^[1] in economically advanced countries. Cervical cancer deaths still dominate developing countries like India where it is prevalent in 14.7% among the female population; second only to breast cancer; with incidence of 96,922 cases.^[2] Of this, Kerala has a crude incidence of 11.7 and an incidence ratio of 1-1.24 compared to other states of India.^[3] This deterioration

persists in an era of improved hygiene practices and community awareness, prophylactic HPV vaccines, and much sophisticated screening and diagnostic techniques. Screening highlights a pivotal step in curbing this as this is one of the few cancers that are preventable, owing to its slow progression.^[4] Unfortunately, two-thirds of patients are diagnosed in the advanced carcinoma stage which necessitates the need for strengthening screening for early detection and awareness.

The major well-known risk factors include infections with oncogenic strains of HPV (16,18)^[5,6] and individual factors like early sexual activity, multiple sexual partners, parity and low socio-economic status.^[7] However, over the years, India has been showing escalating rates of this malignancy compared to the other high-resource countries due to its low hygienic environment in rural areas, unsafe sexual practices, lack of regular screening

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practices and opportunities, lack of widespread prophylactic HPV vaccinations. Apart from the existing diagnostic hurdles in these areas, non-compliance of diagnosed patients to further follow-up on clinical appointments and treatment options proves fatal.^[8]

By far, Pap smear has been the archetype and standard approved method used for screening.^[9] Its sensitivity of 72% and specificity of 94%, low cost and less invasive features makes it quite ideal for population-based screening.^[10] Previous cost-effectiveness analyses have shown that frequent cytological screening for cervical cancer have huge benefits in terms of cost per life years saved.^[11,12] It has also accounted for a large decrease in incidence and mortality of cervical cancer.^[13-16] A high rate of false-negative smears and atypical squamous cells (ASC) diagnoses with Pap smears have led to the debate of considering other methods for screening. However, in a developing country like India with a huge population, screening with Pap smear is the only stand against cervical cancer. Other techniques like Visual inspection method using acetic acid (VIA) and Lugol's iodine (VILI) followed by a biopsy, HPV-DNA testing and direct colposcopy are adopted as screening methods in certain parts.^[17,18]

This study was done to screen for cervical dysplasia and reproductive tract infections by clinical examination and using Pap smear in various parts of Kerala, India and to relate to its associated factors in these specified areas.

Subjects and Methods

We conducted a cross-sectional study among women who participated in voluntary cancer detection camps conducted in six regions of Kerala, South India from December 2018 to April 2019. All women aged above 30 years were selected for this study. Data were collected using an interview schedule that included their biodata, sociodemographic backgrounds, family planning programs, presenting complaints, menstrual history and general health status. Following this schedule, a detailed gynecological examination was done. The examination included inspection of the external genitalia and per speculum visualization to check for any discharge and note the appearance of the cervix. A sterile endo-cervical swab and high vaginal swabs were used under aseptic precautions to collect specimens for microscopic examination. Using disposable wooden Ayer's spatula, Papanicolaou (Pap) smear was collected, prepared onto glass slides and fixed using an ethanol-based fixative. These smears were then transported, within 24 hours, to the pathology laboratory, where they were studied and documented. Abnormal reports were informed and the patients were called in for a further evaluation and proposed treatment with the best available treatment guidelines.

The study was conducted under the ethical guidelines. Each study participant provided written informed consent. Data were analysed using SPSS statistical software (version 23.0, SPSS Inc). Qualitative variables were expressed as number (percentage),

and quantitative variables were expressed as mean (standard deviation).

Results

A total of 199 women underwent screening. The mean age was 45.87 ± 9.8 years. Almost half of the women were aged equal to or below 45 years, which added up to a total of 98 (49.24%) women. 34 (17.08%) women were aged between 46 and 50 years and 67 (33.66%) women were aged above 50 years. Although most women came for screening without any clinical symptoms, some of them presented with a specific complaint. Table 1 shows the details of the presenting complaints of the study population.

Regarding the menstrual history, 33 (16.6%) women attained menopause while the remaining 166 (83.4%) women were at pre-menopausal stage.

Table 2 depicts the details of those who chose surgical sterilization as a means of contraception over other methods.

After examination of the Pap smears, the majority were negative for cervical dysplasia and reproductive tract infections. A few were pathologically diagnosed with certain infections, inflammatory conditions and aplasia. Unfortunately, very few smears were not readable.

Table 3 shows the details of the pathological diagnosis from the Pap smears collected from the study population.

Table 4 shows the detailed interpretation and classification of the results under two general categories as per the Bethesda classification: (1) Negative for intraepithelial lesion/malignancy. (2) Epithelial cell abnormality.

Discussion

According to WHO, cervical cancer is the fourth most frequently occurring cancer in women, the eighth most common cancer overall and the second most common cancer among females in India. Cancer mortality profile of India shows that 20.7% of female cancer deaths are due to cervical cancer.^[18] From the given statistics, the importance of screening for cervical dysplasia for early detection and treatment of cervical cancer cannot be overemphasized.

In our study, 51% of women were aged above 45 years. Previous studies in India have shown that the incidence of cervical cancer is highest in the age group of 50-59 years.^[19] So, selecting a population from the target age group makes this a significant study.

The health awareness in Kerala is always well appreciated and its health indicators are close to that of developed countries.^[20,21] In our study, (68.3%) appeared without any clinical symptoms that could signify the height of community education on the need for

Table 1: Presenting complaints of the study population

Clinical history	Frequency	Percentage (%)
Screening	134	68.3
Abnormal Uterine Bleeding	31	15.1
Mass PV	10	5.0
Infections	24	11.6
Total	199	100.0

Table 2: The details of those who chose surgical sterilization over other contraceptive methods

Sterilized	Frequency	Percentage (%)
No	136	68.3
Yes	63	31.7
Total	199	100.0

Table 3: Pathological diagnosis from the Pap smears collected

Diagnosis	Frequency	Percentage (%)
Infections	2	1
Inflammatory	27	13.5
Pre-malignant lesions	3	1.5
Others (Ectropion, metaplastic squamous cells)	4	2
Normal	159	80
Smear not readable	4	2.0
Total	199	100.0

Table 4: Interpretation and classification of the results under 2 general categories as per the Bethesda classification: 1. Negative for intraepithelial lesion/malignancy. 2. Epithelial cell abnormality

Interpretation	Frequency	Percentage (%)
1. Negative for intraepithelial lesion/malignancy		
1.1 Bacterial vaginosis	1	2.7
1.2 Candida	1	2.7
1.3 Ectropion	3	8.1
1.4 Inflammatory cellular changes	27	75
1.5 Metaplastic squamous cells	1	2.7
2. Epithelial cell abnormality		
2.1 ASCUS	2	5.4
2.2 LSIL (Nuclear Atypia)	1	2.7
Total	36	100.0

regular screening. However, the major gynaecological complaint was Abnormal Uterine Bleeding (AUB). This is a significant burden and severely affects women's quality of life.^[22-24] Hence, a thorough clinical evaluation should be commenced, which could find the cause of AUB and can help in deciding further management.^[25]

Pap smears showed that (80%) were negative for any lesion or inflammatory changes. This could indicate that this study

population was less exposed to risk factors. Good personal hygiene and decreased sexually transmitted diseases are good indicators. Considering the social and cultural background of this population, reduced cigarette smoking among women and reduced possibility of multiple sexual partners are supportive. In contrast, a study from the East India has shown a significant correlation between cytological test results and addiction to betel leaf and smoking or chewing tobacco.^[26] In studies from western countries, only (56%) Pap smears were normal and had high smoking rates (68%) in women.^[27]

Considering the surgical sterilization rates in this study, (68.3%) were not sterilized, and thus, indicating that women prefer other methods of family planning. This does not rule out the possibility of a lack of awareness for the use of contraception in this population. In a study done in Turkey,^[28] the most commonly used contraceptive method was coitus interruptus (38.3%), and only (5.4%) underwent sterilization.

In our study population, the low frequency of atypical epithelial cell abnormalities could be due to the low-risk populations. ASCUS (5.4%) proved to be the most common epithelial cell abnormality which was very similar to various other studies.^[29-32] However, (2.7%) did show LSIL with nuclear atypia. Among the abnormal smears, the majority (75%) showed inflammatory cellular changes. Other studies too show the predominance of inflammatory smears in various populations.^[29,33,34] The population who hesitates to visit these screening camps also constitute the population at risk and would affect the incidence rates. Our study thus elucidates the importance of community-based screening for cervical cancer using Pap smears. This not only helps in the early detection of cervical cancer but also provides means for community education and awareness about the fatal aspect of the disease.

This study also highlights the need for practicing viable and affordable screening techniques that can be practiced by both primary care physicians and Gynaecologists. This study also specifies the need for prophylactic HPV vaccination; not included in the National Immunization Schedule, for those at risk.

Conclusion

Our study focuses on screening for cervical dysplasia and reproductive tract infections in different parts of Kerala, India. This study also depicts the feasibility of using Pap smears in community-based screening for cervical cancer. Due to the presence of non-specific inflammation on Pap smear, further evaluation of reproductive tract infections and regular follow-up of those with inflammatory changes is necessary as they can develop dysplastic changes in the future.

More importantly, this study stresses the need for physicians/gynecologists to recommend and conduct viable and affordable screening procedures as routine or for those at risk. Further, as the National Immunization Schedule does not recommend

regular HPV vaccination, it requires physicians to properly guide those at risk to receive the prophylactic HPV vaccination.

Undertaking this study was beneficial by two-fold as it helped in raising community awareness and education too. We recommend such community-based screening programmes regularly to identify the diseased individuals and bring them to treatment as well to spread community awareness to curb the fatal consequences of cervical cancer.

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Conflicts of interest

There are no conflicts of interest.

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