

Utility of Pap smear screening for prevention of cervical cancer- A 3yrs study from rural Tripura - A northeastern state of India

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ABSTRACT

Background: Cancer cervix is a leading cause of mortality and morbidity among women worldwide. According to National Cancer Registry Program of India, cancers of cervix and breast are leading malignancies in Indian women. The morbidity and mortality could be significantly reduced with an active cervical smear screening programme.

Objective: The study was done to evaluate the knowledge and attitudes of women about cervical smear testing, to establish a cervical smear screening program and to evaluate the cervical cytological abnormalities. It was done to determine the applicability, limitations and utility of this screening in a district hospital.

Materials and Methods: A total of 287 married women were included in our study. Knowledge about Pap smear testing was determined through printed questionnaires. Pap smear screening was performed on every woman in our study group. Detailed clinical data and cytology reports were noted in a proforma.

Results: About 92% women of our study group had never heard or undergone Pap smear screening before. Maximum number of patients was in 4th decade. Of the 287 smears, 276(96.16%) were adequate. Normal smear were 78(27.18%), inflammatory 168(58.54%), whereas epithelial cell abnormalities were seen in 26(9.05%) cases. The 26 abnormal cases comprised of 17(5.92%) cases with ASC-US, 5(1.74%) cases of LSIL, 1(0.35%) cases of HSIL, 3(1.04%) cases of squamous cell carcinoma.

Conclusions: Epithelial cell abnormality in our study group was less than Western countries. There is poor knowledge about Pap smear screening. Pap smear study can be easily done through a chain built between the primary health care unit and

district hospital and laboratory.

Key Words: Pap smear, cervical smear, cervical intraepithelial lesion, cervical cancer, cervical cancer screening, Bethesda system

Introduction

Cancer of uterine cervix is a leading cause of mortality and morbidity among women worldwide. In developing countries it is the most common gynecological cancer and one of the leading causes of cancer death among women. This scenario is due to lack of awareness and poor uptake of cervical cancer screening services especially in low income countries. Cervical cancer is the seventh cancer in overall frequency, but the third most common cancer among women worldwide. An estimated 530,000 new cases were in 2008, of which more than half are fatal. Incidence and mortality of cancer cervix in India is 134420 and 72825 per year respectively. [1] Fifty years ago, carcinoma cervix was the leading cause of cancer deaths in women in United States, but death rate has declined by two third due to effective screening, early diagnosis, and curative therapy. Nearly 4 lacs new cases of cervical cancers are diagnosed annually

worldwide and 80% of them are diagnosed in the developing countries. There are 1.7 million cases in the developing world and as many as 5-13 millions women have precancerous lesions. [2,3] In general terms, cervical cancer is much more common in developing countries, where 83% of cases occur and where cervical cancer accounts for 15% of female cancers, with a risk before age 65 of 1.5%. In developed countries, cervical cancer accounts for only 3.6% of new cancers, with a cumulative risk (0 to 64) of 0.8%. [4,5,6] According to National Cancer Registry Programme of India, cancers of uterine cervix and breast are leading malignancies seen in Indian women. [7]

In Tripura according to National Cancer Registry Programme five year report (2010-2014) cervix uteri is the leading site of cancer in women of Tripura. [8] Cervical cancers can be prevented through early detection using several screening

techniques. Intensive screening programmes in various countries show a striking reduction in mortality from cancer of cervix. There are various screening test for cervical cancer like Pap smear, liquid Pap cytology, automated cervical screening techniques, visual inspection of cervix after Lugol's Iodine and acetic acid application, speculotomy, cervicography. Out of all these, exfoliative cytology has been regarded as the gold standard for cervical screening programs.^[9] Cervical smear is a sensitive test for early screening of the cervical lesion and most widely used system for describing PAP smear result is TBS [2001, The Bethesda System].^[10]

In general, in countries where Pap smear screening is routine, it is recommended that females who have had sex should seek regular Pap smear testing. Guidelines on frequency vary from every three to five years. If results are abnormal, and depending on the nature of the abnormality, the test may need to be repeated in six to twelve months.^[11] In 1988, the Bethesda system of terminology has been introduced to sub-classify the lesions into grades: high grade and low grade Squamous Intraepithelial Lesions (SIL) for Pap smear reporting and some studies reported comparison of various terminologies.^[12,13] The Bethesda System (TBS) for reporting the results of cervical cytology was developed as a uniform system of terminology that could provide clear guidance for clinical management.^[14] The present study was intended to evaluate the knowledge and attitudes of women about cervical smear testing; to establish a cervical smear screening program and to evaluate the cervical cytological abnormalities that were found; and to determine the applicability, limitations and effectiveness of this screening in a district hospital.

Materials and Methods

The study was performed at Obstetrics and Gynaecology outpatient department at Khowai District hospital and Department of Pathology TMC and DR BRAM Teaching Hospital during the period 1st August 2013 to 31st January 2016. Data were collected concerning socio-demographic and fertility characteristics. In the first phase of the

study, a questionnaire prepared by the authors was used to determine the women's socio-demographic and fertility characteristics, and the knowledge of the women regarding Pap smear testing. A total of 287 women answered the questionnaire.

In the second phase of the study, when the questionnaire was completed, women were invited to the Obstetrics and Gynaecology outpatient department of Khowai District Hospital on a given date for Pap smear testing at the proper time of their menstrual cycle. The women were advised not to take a vaginal shower, have sexual intercourse, or use a tampon, gel or vaginal cream within 48 hours before coming to the OPD. After a vaginal examination, cervical smears were taken from 287 women with the help of Ayer's spatula and cyto brush to collect specimen from the squamocolumnar junction. The cellular material obtained on the spatula and cyto brush was quickly smeared on a clean glass slide. Two smears were prepared for each case. The glass slides were then fixed immediately by immersing them into the coplin jar containing 95% ethyl alcohol and sent to the pathological laboratory of TMC and Dr BRAM Teaching hospital at the end of every working day. During the examination disposable speculums were used. All of the vaginal examinations were performed and all of the smears were taken by the gynecologist. The smears were stained with Papanicolaou stain (PAP stain) in cytology laboratory of Pathology Department of TMC and Dr BRAM Teaching hospital. After mounting the slides with DPX (Distrene dibutyl phthalate xylene), slides were examined under light microscope and were reported by two pathologists independently according to the 2001 Bethesda system. Evaluation of the cervical cells was done using the Bethesda System 2001 as follows:

- 1) Negative for intraepithelial lesion or malignancy (NILM)
 - a) Organisms
 - Trichomonas vaginalis
 - Fungal organisms morphologically consistent with Candida spp.
 - Shift in flora suggestive of bacterial vaginosis
 - Bacteria morphologically consistent with Actinomyces spp.

- Cellular changes consistent with Herpes simplex virus.
- b) Other non-neoplastic findings
- Reactive cellular changes
- Atrophy
- 2) Epithelial cell abnormalities
 - a) Squamous cell
- Atypical squamous cells of undetermined significance (ASC-US)
AGUS: Atypical glandular cells of undetermined significance
- Cannot exclude HSIL (ASC-H)
- Low grade squamous intraepithelial lesion (LSIL) encompassing: human papilloma virus (HPV)/mild dysplasia/CIN 1
- High grade squamous intraepithelial lesion (HSIL) encompassing: moderate and severe dysplasia, CIS/CIN 2 and CIN3 with features suspicious for invasion (if invasion is suspected)
- Squamous cell carcinoma
 - b) Glandular cell

- Atypical
 - Endocervical adenocarcinoma in situ
 - Adenocarcinoma
 - 3) Other malignant neoplasms
- Data were recorded in a master chart and presented as percentage.

Results

About 92% women of our study group had never heard of and had not undergone Pap smear screening before. Only 7.5% of the study participants had "good" knowledge of cervical cancer and Pap smear screening. Approximately 5% of the women had a previous Pap smear test. Seventy percent of those who had higher levels of education had never had a Pap smear test. Awareness of risk factors for cervical cancer was low. Fear of pain, positive results after screening, non-curability of cervical cancer were some factors associated with a low Pap test uptake.

Table 1: Questionnaire showing percentage of correct and positive answers by the participants

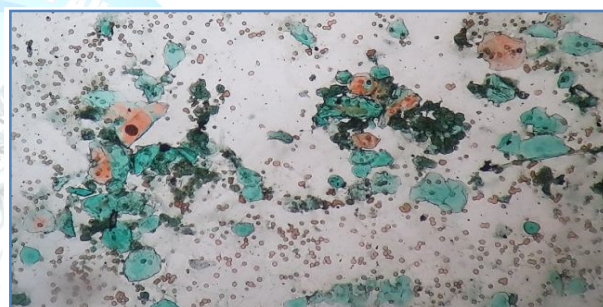
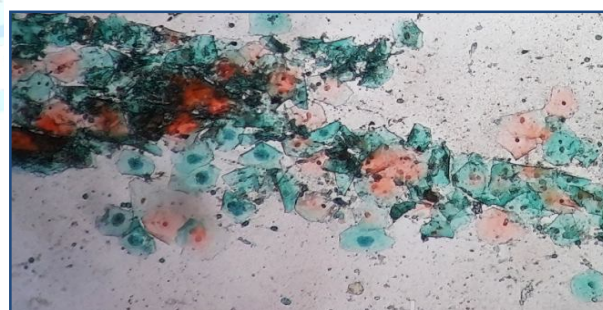
Educational qualification	
Question	Percentage of correct and positive answers for each question
What is cervical cancer?	7.5%
At what age are women most likely to have cervical cancer?	2.3%
Why is Pap screening conducted?	4.5%
How often does a doctor or nurse recommend for Pap's test?	
Do you have gone through Pap smear test earlier?	5.2%
Did you ever refused for Pap's test? If yes then write the reason behind it.	11.6%
What is the accuracy of test to detect abnormality?	7.8%
Which are the risk factors of cervical cancer?	
Having many children	5.6%
Family history of cervical cancer	7.4%
Smoking	25.9%
Having many sexual partners	41.8%
Having viral infection caused by HPV	1.4%
Having sexual intercourse at an early age	9.7%
All of the above	16.9%

Table 2: Various nonneoplastic and neoplastic pathology of cervix in relation with age

Age group (years)	18-30	31-40	41-50	51-60	61-70	Total (%)
Unsatisfactory smears	2	1	2	2	4	11(3.83)
Normal smear	18	31	9	11	9	78(27.18)
Inflammatory	21	36	50	40	21	168(58.54)
Radiation changes	0	0	0	1	0	1(0.35)
Atrophy	0	0	0	1	2	3(1.04)
ASCUS	3	7	3	2	2	17(5.92)
LSIL	1	2	1	1	0	5(1.74)
HSIL	0	0	1	0	0	1(0.35)
SCC	0	1	1	1	0	3(1.04)
Total	45	78	67	59	38	287

A questionnaire was used to assess the educational qualification, the knowledge on cervical cancer and its risk factors and Pap smear screening. Questionnaires were in English, Bengali, Hindi and Kokbarak (tribal language). The percentage of correct and positive answers for each question recorded (Table: 1) The level of knowledge on cervical cancer was very poor. Only 7.5% women were assessed to have "good" knowledge. Knowledge on the "risk factors of cervical cancer", "having many sexual partners" was the most widely known risk factor (41.8%). Only 1.4% of the participants felt that "HPV infection" was a risk factor for cervical cancer. Various nonneoplastic and neoplastic pathology of cervix in relation with age is displayed on Table 2.

Maximum number of patients was in the age group of 31 – 40 years (fourth decade). Of the 287 smears evaluated, there were 11(3.83%) unsatisfactory or inadequate samples, 276(96.16%) were adequate. Normal smear were 78(27.18%), inflammatory 168(58.54%), radiation changes 1(0.35%), whereas epithelial cell abnormalities were seen in 26(9.05%) cases. The 26 abnormal cases comprised of 17(5.92%) cases with ASC-US, 5(1.74%) cases of LSIL, 1(0.35%) cases of HSIL, 3(1.04%) cases of squamous cell carcinoma (SCC).

**Fig. 1 Microphotograph showing ASCUS in PAP smear****Fig. 2 Microphotograph showing HSIL in PAP smear**

Discussion

With the changes in the life styles and demographic profiles in developing countries, non-communicable diseases are emerging as an important health problem which demand appropriate control program before they assume epidemic propagation. Cancer has been a major cause of morbidity and mortality. According to National Cancer Registry Program of India,

cancers of uterine cervix and breast are the leading malignancies seen in females of India. There should be an effective mass screening program aimed at specific age group for detecting precancerous condition before they progress to invasive cancers.^[2,3,15]

Cervical cytology is currently widely used as the most effective cancer screening modality. The role of HPV in development of cervical cancer is proved beyond doubt. If Pap screening is associated with HPV-DNA testing than we can increase the sensitivity. World Health Organization (1992) recommended screening every woman once in her lifetime at 40 years.^[5,15] Pap smear examination is widely accepted screening method. In countries like India with predominant rural population is having low socio-economic status, marriage at an early age and poor medical facility. It is a major challenge to formulate a screening program that is easily available, within existing resources, to a large section of society.

In our study, maximum number of patients was in the age group of 31 – 40 years (fourth decade). Similar finding was detected by other studies.^[16] In our study most of the cases are benign (87.11%), of which non-specific inflammation (58.54%) was the pre-dominant one. Other studies revealed 95% and 74.3% cases of NILM (negative for intraepithelial lesion or malignancy) respectively.^[17,18] Epithelial cell abnormalities, that is the total of ASCUS, LSIL, HSIL and SCC were seen in 26(9.05%) cases in our study which varied between 1.5 and 12.60% in various studies.^[19,20] Our study revealed ASCUS (5.92%) to be the most common epithelial cell abnormality. Similar results were found in other studies also.^[21]

The morbidity and mortality caused by cancer uterine cervix could be significantly reduced by an active cervical smear screening (PAP smear) programme. This study emphasized the utility of Pap smears screening for early detection of premalignant and malignant lesions of cervix. Although the relatively small size of our study group may have been a limitation, we believe that this study reveals some important issues. There is poor knowledge and perceived

barriers by women about Pap smear screening and follow-up services. It is a major challenge to formulate a screening programme that is easily available, within existing resources, to a large section of society. There should be some locally understood messages to increase the awareness of the disease; women should be motivated to get tested at once; outpatient treatment and appropriate follow-up care should be widely available. We can develop a cost effective screening method by training medical and paramedical staff starting from primary health centre level up to the highest level. Pap smears can be easily taken and evaluated through a chain built between the primary health care unit and District hospital and laboratory, and is easily accepted by the population served. It should be subsequently followed with Human papilloma virus deoxyribonucleic acid (HPV-DNA) testing at higher centers.

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