Research Paper

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Correlates of Epithelial Cell Abnormality of Cervix Among Underserved Women

Medical Science

KEYWORDS : Epithelial cell abnormality, Underserved woman, Reproductive correlates, Demographic parameters

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ABSTRACT

Background: In the low resource settings of a developing country, the rural and tribal populations are not regularly screened for epithelial cell abnormality of cervix and no recorded data is available.

Aim of the study: To know the prevalence and correlates of epithelial cell abnormality in the rural and tribal population of Srikakulam district, Andhra Pradesh.

Materials and Methods: A cross-sectional descriptive study in a cervical cancer screening camp in a primary health center at Srikakulam district was carried out in a total of 1082 patients who underwent Pap smear examination.Results tabulated. Results: 166 (15.34%) revealed epithelial cell abnormality. LSIL, HSIL and squamous cell carcinoma was more common in women with age of marriage < 19 years, abortion more than two times and low socioeconomic status.

Conclusions: A raised prevalence of epithelial cell abnormality reflects the lack of awareness about cervical cancer screening and underusers of cytological screening programme.

Introduction

Cervical cancer is considered preventable, as the premalignant stages can be detected by exfoliative cytology like a Papanicolaou (Pap) smear examination. Nowadays, cytology along with Human Papilloma Virus (HPV) testing is being assessed as a screening test for cervical cancer in the developed countries. Similar to other DNA viruses (e.g., Adenovirus, Hepatitis B virus, etc.), HPV is detected by DNA testing with polymerase chain reaction (PCR) or Hybrid capture (HC). However, in the setting of a developing country the Pap test is useful as a screening modality, which is ultimately geared toward the reduction of cervical cancer-related mortality by the earlier detection of premalignant lesions.

Cervical epithelial cell abnormalities in the Pap smear represent a spectrum of intraepithelial lesions that lie along the pathway, from mild-to-severe dyskaryosis to invasive cancer. The significance as well as consequence of cervical cytology with atypia or dyskaryosis has been extensively studied. According to the 2001 Bethesda System for reporting cervical cytological diagnoses, epithelial cell abnormalities originate in the squamous or glandular cells. The category of atypical squamous cells (ASC) includes ASC-US (ASC of undetermined significance) and ASC-H (ASC, cannot exclude high grade squamous intraepithelial lesions). The positive predictive value for HSIL (High-grade squamous intraepithelial lesion) in ASC-H is higher than in ASC-US, but not as high as in the category of HSIL. [1] The generic term squamous intraepithelial lesion (SIL) is subdivided into lesions showing perinuclear halo and mild dyskaryosis, termed as Low-grade squamous intraepithelial lesion (LSIL) and lesions showing moderate-to-severe dyskaryosis and carcinoma in situ, termed as HSIL. The category of "atypical glandular cells" is designated as AGC. Smears showing no epithelial abnormalities are depicted under the category of Negative for intraepithelial lesion or malignancy (NILM), in the revised Bethesda system.

Screening with Pap smear has been seen to be accompanied by a dramatic reduction in the incidence of invasive cervical cancer in different countries of the world. To date two types of Pap tests are in use: conventional and liquid-based cytology. Even as the liquid-based test is popular in the developed countries, in low resource settings, a conventional Pap test is the mainstay screening system. Various studies reveal that a majority of the cervical cancer mortality of the world comes from developing countries. [2, 3] This may be attributed to the absence of an efficient cervical cancer screening system. Therefore, it is important to know the overall scenario of epithelial cell abnormality in the Pap smear, in a developing country. Again, in order to counsel women and to organize a public health system for cervical cancer screening by Pap smear examination, it is imperative to know the pattern of premalignant and malignant lesions.

Srikakulam district is one of the backward districts in the state of Andhra Pradesh which has many rural and urban population with low literacy rate.So far there is no recorded study on the proportion of epithelial cell abnormality in these areas in English literatute.This study was done to know the magnitude of epithelial cell abnormality of cervix, the various variables responsible for it and also to create awarness of the screening programme.

Material and methods

This is a population based descriptive cross sectional study in a cervical cancer screening camp conducted in the year 2014 at Srikakulam district which has both rural and tribal population. Women in the age group 15-60 years referred from various primary health centres were included in the study.A total of 1082 women attended the screening programme.Women already diagnosed with epithelial cell abnormality and under treatment were excluded from the study.Recorded data in semi structured pretested open ended questionnaire.All the cases were clinically examined and the Pap smear were collected after VIA (Visual inspection with 3% acetic acid) test.In all the cases, smears were obtained from squamo columnar junction and endocervix; they were well fixed in 95% absolute alcohol. Smears were stained with Papanicoloau stain. Reporting of Pap smears were done by adopting Revised Bethesda 2001 system of classification. Chi square test was applied to find out the differences significance in the proportions and percentages of the correlates in the study. The patients were subjected to repeat Pap smear examination after a period of three months, if the lesions were persisting biopsy was done and the data was recorded.

Results

Among the 1082 subjects who had been subjected to Pap smear procedure, 166(15.34%) revealed epithelial cell abnormalities and 916(84.65%) were Negative for intra epithelial lesions. [Table 1]. Non specific infections were seen in 740(80.78%) of subjects and specific infections in 176(19.21%) of subjects. Among specific infections candida albicans constituted 139(15.17%) followed by mixed infection by candida albicans and trichomonas vaginalis 22(2.40%).Subjects revealed ASC-US in 120(72.28%), ASC-H in

15(9.3%),LSIL in 15(9.03%),HSIL in 8(4.81%) and squamous cell carcinoma in 8(4.81%).[Table 2].Majority of the subjects with epithelial cell abnormality were asymptomatic 52(31.32%) followed by menstrual abnormalities 45(27.10%) and white discharge 15(9.03%).(Table 3).History of multiple sexual partners in husbands was seen in 6.02% of cases with epithelial cell abnormality and 5.42% woman had history of smoking.

Relation of reproductive variables and cellular changes in the epithelium: Epithelial cell abnormality was common in the age group ≥ 30 years,155(93.37%) and LSIL,HSIL was common in the age group ≥ 40 years,23(13.85%).ASC-US was more common between 30-49 years 104(62.65%) and ASC-H 12(7.22%).LSIL and HSIL was more common in the age group 40-59years,23(13.85%).Eight cases of squamous cell carcinoma(4.81%) was seen between 30-59years and all the cases were asymptomatic.Eleven cases of ASC-US and ASC-H(6.62%) were seen between 20-29 years.Age of marriage ≤ 21 years had almost all the cases with epithelial cell abnormality with maximum group between 13-18 years of marriage,98(59.03%).Seven cases of ASC-US(4.21%) was seen in women getting married at the age less than 13 years.Prevalence of LSIL,HSIL and squamous cell carcinoma was more common in women who got married in the age less than 19 years(P value <0.05).Variants of epithelial cell abnormality had no association with age at first child birth(P value >0.05).LSIL,HSIL and squamous cell carcinoma was more common in women who had history of abortion more than two times (P value <0.05).(Table 4).

Relation between the sociodemographic correlates and cellular changes in the epithelium: The prevalence of epithelial cell abnormality was more common in illiterates 103(62.04%), however LSIL, HSIL and squamous cell carcinoma had no association with literacy. (P value >0.05). LSIL, HSIL and squamous cell carcinoma was more common in low socioeconomic women who had per capita income less than 10,000 per month (P value <0.05). LSIL, HSIL and squamous cell carcinoma was more common in rural population than tribal population (P value <0.05). (Table 5)

Discussion

Women in India face constraints not only in obtaining health services, but also in expressing reproductive health needs. Lack of awareness, cultural barriers and economic factors prevent them from seeking timely care.

Epithelial cell abnormality: Various studies on the prevalence of cervical epithelial cell abnormality in the Pap smear revealed 13.74% by Aparna Narasimha et al[4] ,3.2% by Kamna Gupta et al [5],5% by Bal MS et al[6],5.5% by Mandakini M P et al[7],4.3% in a tertiary hospital in Kuwait,[8]5% in a large referral hospital in Saudi Arabia, [9]0.95% in Jewish Israeli women,[10]1.66% in the Western region of Saudi Arabia,[11] , 7.9% in South-western Saudi Arabia.[12] However, unlike the previous studies, our study showed a raised prevalence (15.34%). This may be explained by the fact that these patients did not visit the health camp for cancer screening purpose, but rather with specific gynecological complaints, such as, something coming down per vaginum, mass descending per vaginum, lower abdominal pain, and abnormal vaginal bleeding or discharge.

ASCUS: With the adoption of Bethesda system in 1989,a new definition has emerged in cervical pathology,the borderline diagnosis termed as atypical squamous of undetermined significance[13].Some investigators have advocated its elimination due to overusage and low reproducibility[14].But in our country,many cytology laboratories are not using the Bethesda system and therefore a large number of them may be labelled as inflammatory. Subsequently these woman may not be followed up meticulously leading to severe cervical pathologies.Meta analysis has shown that over a period of 2 years,the rate of progression from ASCUS to invasive cancer was0.25% and to HSIL 7.13%,while the rate of regression is 68.19%[15,16].

In the study by Sengupta Rinku et al [17] 86 patients with report of ASCUS were followed up for 2years.ASCUS was detected in 5.3% of pap smears.75.4% lesions regressed whereas 19.7% had repeat ASCUS on pap smears after 4-8months.64% of patients with repeat ASCUS had normal biopsy.But 52% of patients with normal biopsy had ASCUS for the third time after 4-8months.Follow up of patients with persistent atypical squamous cells of undetermined significance showed LSIL in 27% and HSIL in 11.7%.Sankara Narayanan R et al[18]anlaysed 22,663 womwn in five cross sectional studies.The prevalence of ASCUS was 8.8%,Mandakini M patel[7]recorded0.1% ASCUS and Aparna Narasimha et al[4] 4.14%.In a low risk population it was suggested that the rate of ASCUS should be less than 5%[19].In the present study out of 1082 women screened 11.09% had ASCUS indicating a high risk population.All these ASCUS and ASC-H group were subjected for repeat pap smear after three months,12% had persistent ASCUS and 88% regressed.On histopathology these 12% of cases with persistent ASCUS showed LSIL in 6%,1%HSIL and 5% nonspecific changes with reparative changes.

LSIL,HSIL and SCC:Time trend analysis of a 10year data in Bangalore,Bombay and Madras and a 4year data in Delhi did not reveal a stastically significant decrease or increase in the incidence of uterine cervical cancer for most of the age groups. Therefore the data on the prevalence of epithelial cell abnormality in various population in the country is not known.There is an urgent need for initiation of community screening and educational programs for the control and prevention of cervical cancer in India.[20]The prevalence of LSIL and HSIL of the present study was compared with other studies[Table 6]

A screening program for women at the largest urban slum in Asia at Haravi Mumbai, out of 164 women screened the pap smear reports showed epithelial cell abnormalities in 2.44% of subjects. [21] A community-based cervical cancer screening program among women of Delhi conducted by Maulana –azad college, on screening 435 women showed 95.7% of the women attending the camp were in the reproductive age group (15-44 years) and illiterate (64.4%). It was observed that 53.3% of women had at least one but less than three children. Most (82.53%) of the women attending the camp had a family income of more than 10000 rupees per month.Most of the patients, who complained of any morbidity, were married at an age below 18 years, had borne more than three children and were illiterate. The percentage of cases diagnosed to be suffering from one or the other reproductive morbidity decreased with increasing age at marriage and literacy levels and also with decreasing parity. Among risk factors associated with morbidity among these women, age at marriage less than 18 years (31.45%), high parity (30.56%) and illiteracy leading to poor genital hygiene (41%) were observed to be the prominent risk factors. The pap smears in 41.1% of subjects showed Negative for intraepithelial lesions with non specific infections and in 23.4% had an evidence of specific infection. HSIL was seen in 2.9% of subjects. [22]In the study by Sengupta Rinku et al [17] the mean age of ASCUS was 36 years with mean parity of 1.5.Kamna Gupta et al [5] in their study documented that frequency of dysplasia showed progressive rise with increasing age. Maximum frequency of LSIL and HSIL > 40 years with parity more than 3.Socioeconomic status did not have any influence in the frequency of LSIL and HSIL.

In the present study prevalence of LSIL, HSIL and squamous cell carcinoma was more common in women who got married in the age less than 19 years.Variants of epithelial cell abnormality had no association with age at first child birth.

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LSIL, HSIL and squamous cell carcinoma was more common in women who had history of abortion more than two times. The prevalence of epithelial cell abnormality was more common in illiterates however LSIL, HSIL and squamous cell carcinoma had no association with literacy.LSIL, HSIL and squamous cell carcinoma was more common in rural population than tribals with low socioeconomic status.

Conclusion:

From this study it is evident that unlike in the developed countries, Pap smear cytology-based screening is not well-organized enough in rural and tribal areas of Andhra Pradesh. Therefore, facilities for cytological screening should be extended up to the primary health care level. If possible HPV testing should be included too. All the women who were reported as ASCUS, LSIL / HSIL in our study were counseled followed with repeat Pap smear and biopsy was taken. Regrettably, so far, only a very small percentage (24.5%) has undergone biopsy and histopathology. Low socioeconomic factors, early age of marriage and poor obstetric history were the risk factors identified in the present study.

TABLE 1: PATTERN OF CERVICAL LESIONS ON PAP SMEARS- 1082 SUBJECTS

NATURE OF LESIONS	NO OF CASES	PERCENTAGE
Negative for intraepithelial lesions or malignancy	916	84.65%
Epithelial cell abnormality	166	15.34%

TABLE 2: PATTERN OF CERVICAL EPITHELIAL CELL ABNORMALITY ON PAP SMEARS - 166

EPITHELIAL CELL ABNORMALITY	NO OF CASES	PERCENTAGE
ASC-US	120	72.28%
ASC-H	15	9.03%
LSIL	15	9.03%
HSIL	8	4.81%
SCC	8	4.81%

TABLE 3: CLINICAL CHARACTERISTICS OF SUBJECTS WITH EPITHELIAL CELL ABNORMALITY- 166

Clinical characteristics	ASC-US n=120	ASC-H n=15	LSIL n=15	HSIL n=8	SCC n=8
Asymptomatic	52	7	7	3	-
Menstrual abnormalities	45	-	-	-	8
Bleeding on touch	15	-	-	-	-
White discharge	15	8	8	5	-

TABLE 4: RELATION OF REPRODUCTIVE VARIABLES AND CELLULAR CHANGES IN EPITHELIUM (age at marriage, age at first child birth, abortion, parity)

Age at Marriage (yrs)	ASC- US	ASC-H	LSIL	HSIL	SCC
<13	7	0	0	0	0
13-18	75	8	15	0	0
19-21	38	7	0	8	8
>21	0	0	0	0	0
Age at Marriage (yrs)	ASC- US	ASC-H	LSIL	HSIL	SCC
	120	15	15	8	8
Age at first child birth(yrs)	ASC-US	ASC-H	LSIL	HSIL	SCC
≤14	8	0	0	0	0
15-19	75	8	8	0	0
20-24	30	7	7	8	8
25-29	7	0	0	0	0
≥30	0	0	0	0	0
	120	15	15	8	8
Abortions	ASC-US	ASC-H	LSIL	HSIL	SCC
<2	60	0	8	0	0
>2	60	15	7	8	8
	120	15	15	8	8

Parity	ASC-US	ASC-H	LSIL	HSIL	SCC
0	0	0	0	0	0
1-2	60	0	8	0	8
3-4	60	15	7	8	0
≥5	0	0	0	0	0
	120	15	15	8	8

TABLE 5: RELATION BETWEEN THE SOCIODEMOGRAPHIC CORRELATES AND CELLULAR CHANGES IN THE EPITHELIUM (educational status, per capita monthly income, and habitat)

Educational status	ASC-US	ASC-H	LSIL	HSIL	SCC
Illiterate	72	8	15	8	0
Primary	30	7	0	0	8
Secondary	10	0	0	0	0
Higher	8	0	0	0	0
	120	15	15	8	8
Per capita monthly family income	ASC-US	ASC-H	LSIL	HSIL	SCC
>10,000	60	0	8	0	
<10,000	60	15	7	8	8
	120	15	15	8	8
Habitat	ASC-US	ASC-H	LSIL	HSIL	SCC
Tribal	60	0	8	0	0
Rural	60	15	7	8	8
	120	15	15	8	8

Table 6: PREVALENCE OF LSIL AND HSIL IN THE PRESENT STUDY COMPARED WITH OTHER STUDIES

AUTHORS	LSIL	HSIL
Sankaranarayanan R et al[18]	6.2%	1.8%
Mandakini M Patel et al[7]	0.1%	0.1%
AparnaNarasimha et al[4]	2.7%	2.5%
Kamna Gupta et al[5]	1.36%	0.9%
Bal MS et al[6]	2.7%	0.7%
Present study	1.38%	0.74%

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