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Reporting of cervical cytology in women attending a tertiary hospital in Guwahati, India : some demographic profiles

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Abstract

Cervical cytology plays an important role in diagnosis of cervical dysplasia and invasive cervical cancer within hours to days in subject to the availability of the Pap test facility in a health centre. The present study was carried out with the aim to detect the abnormality in the uterine cervix among the women of age group 20-65 years who attended gynecology OPD of Gauhati Medical college during September, 2011 to August, 2012; also to find out the association of dysplasia detected by cytology with age factor and parity status of the women. The procedure included scrapping from transformation zone of uterine cervix by exposing the cervix with help of Cusco's speculum; then smeared in a clean grease free glass slide, alcohol fixed and stained with papanicoloau stain. Smears were reported according to the Bethesda system 2001 which showed 88.05% smears were negative for CIN and 11.95% were showing positive results with varying degree of CIN to invasive cancer. There exists a significant association between the age of the patients and the cytological category with p value <0.05; association of increased parity with the abnormal cytology is also significant with p value <0.01.

Keywords : Dysplasia, Pap test, Papanicolaou stain, Transformation zone, Cervical cancer, CIN.

1. Introduction

Cancer of the cervix uteri is the second most common cancer among women worldwide, with an estimated 529,409 new cases and 274,883 deaths in 2008. About 86% of the cases occur in developing countries, representing 13% of female cancers. Worldwide, mortality rates of cervical cancer are substantially lower than incidence with a ratio of mortality to incidence to 52% (IARC, GLOBOCAN 2008). About 12.7 million cancer cases and 7.6 million cancer deaths are estimated to have occurred in 2008; of these, 56% of the cases and 64% of the deaths occurred in the economically developing world. The majority of cases are squamous cell carcinoma and adenocarcinomas are less common. In U.S.A. both the incidence and mortality rate has declined significantly, and largely attributable to the introduction of cervical cytology screening since 1940 (Cibas, 2003). Cervical cancer, once a leading cause of cancer related death in women in U.S. now ranked 13th. Of course, even now estimated 11,150 women are still diagnosed each year with invasive Cervical cancer and approximately 3,670 die of their disease (Cancer Statistics, 2007); it ranks 1st in many developing countries lacking cervical cytology screening programme.

India has a population of 365.71 millions women ages 15 years and older who are at risk of developing cervical cancer. When Indian scenario is observed, current estimates indicate that every year, 132082 women are diagnosed with cervical

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cancer and 74118 die from the disease. Cervical cancer ranks the 1st most frequent cancer in women in India, and the 1st most frequent cancer among women between 15 and 44 years of age. (Human Papillomavirus and Cervical Cancer - Summary Report INDIA : Updated year 2007 (WHO & ICO). The age adjusted annual incidence rate of carcinoma of the uterine cervix in the districts of Dibrugarh, Kamrup Urban and in Silchar Town of North-East India are 11.8%, 13.1% and 13.9% respectively (ICMR, 2003-2004).

Cervical cytology preferably known as Pap test is one of the easy, quick and cost effective method to detect precursor lesion or cervical cancer.

2. Aim of the present Study

The aim of the study is to detect abnormality in the cervical smear by Pap test and to correlate its association of some of the demographic profile.

3. Materials & method

The study is carried out in the cytology section, Clinical laboratory of Pathology Department, Gauhati Medical College, Guwahati, India.

3.1. Patient Population

The patient population comprised of 226 cervical scrapping collected from married non pregnant women attending Gynecology OPDs of GMCH, Guwahati. The Proforma was duly filled up. The study was approved by Institutional Ethical Committee of GMCH vide letter No. MC/190/2007/Pt-1/71 dated 15/12/10.

3.2. Specimen Collection for Cervical cytology by Pap Stain

Cytological Samples have been collected using cotton tipped applicator stick/Ayere's spatula after visualizing the cervix using the Cusco's speculum from both ecto & endo cervix including transformation zone onto clean grease free labeled glass slides, fixed immediately in absolute alcohol. The smears are stained using Papanicolaou stain and examined by light microscope. The smears were reported according to the Bethesda system 2001which categorize the smears as i) No Intra epithelial lesion (NILM) or malignancy, ii) Epithelial cell abnormality (ECA) and iii) Others depending upon the presence or absence of abnormal epithelial cells exfoliated in the cervical scrapping [Solomon *et al.,* 2002]. Presence of koilocytic atypia in a squamous cell signifies Human papilloma virus related change and categorize LSIL. Severe dysplastic change in the epithelium is seen in HSIL.

4. Results and Observation

4.1. Results of Cervical Cytology / Pap Test

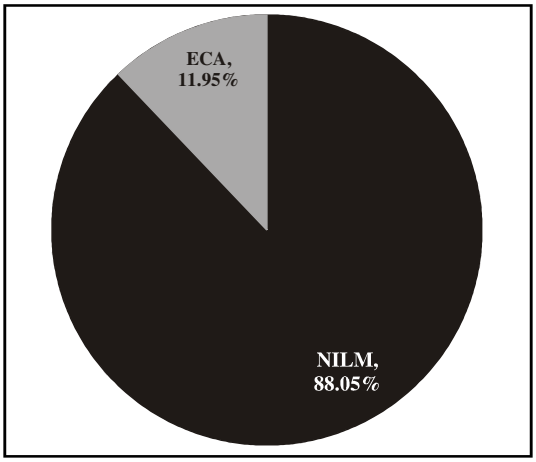

Figure-1 : Pie diagram showing the % distribution of patients according to cervical Cytology report.

4.2. Table - 1 : Results of NILM

Results of NILM	No. of cases	%
Trichomonas vaginalis (TV)	23	11.56
Candida sp.	20	10.05
Shift in flora suggestive of Bacterial Vaginosis (BV)	119	59.80
Cellular changes consistent with Herpes simplex virus	04	2.01
Benign reactive change including metaplsia	21	10.55
Atrophic Vaginitis	12	6.03

4.3. Table - 2 : Results of ECA

Results of ECA	No. of cases	%
ASCUS	03	11.11
LSIL	08	29.63
HSIL	08	29.63
SCC	08	29.63

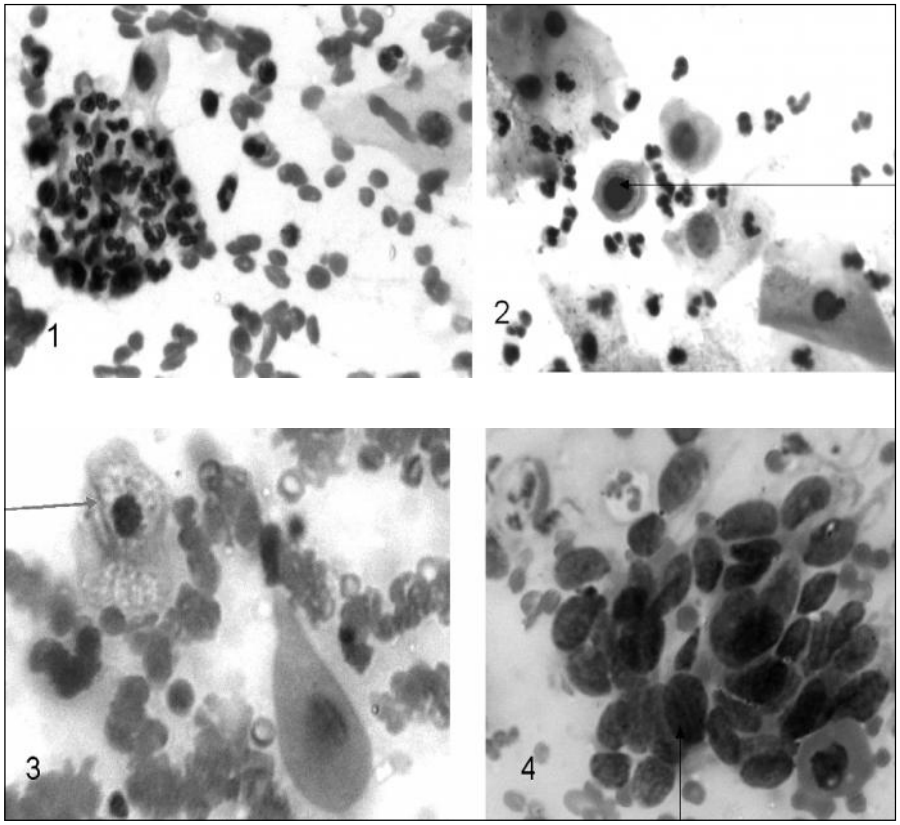

Figure - 2 : Photomicrograph of cervical Lesions.
1. Inflamatory smear, 2. ASCUS, 3. Koilocyte in LSIL, 4. H.S.IL

4.4. Table - 3 : Association of Age of the Patient with abnormal cytology.

Category / Age Group	NLIM	ASCUS	LSIL	HSIL	ICC	Total	d.f	Chi-Square (χ^2) -Value
20-29	45	1	0	2	0	48	16	31.50* (p<0.05)
30-39	73	1	2	3	2	81		
40-49	64	0	2	1	2	69		
50-59	13	1	3	1	3	21		
60 & above	4	0	1	1	1	7		
Total	199	3	8	8	8	226		

[The critical value of (χ^2) with (5–1) × (5–1) = 16 degrees of freedom at 0.05 level of significance is 26.296]

Table 3 has depicted the distribution of patients according to their age and abnormal cytological categories. To test the association between cytological category and the age of the patients, Chi-Square (χ^2) test been applied. The data has been analyzed by adopting the software Graph Pad InStat. As the calculated χ^2 value is higher than the critical value with 16 degrees of freedom at 0.05 level of significance i.e. $p<0.05$, so we can interpret that there exists a significant association between the age of the patients and the cytological category.

4.5. Table - 4 : Association of Parity of the Patient with abnormal cytology.

Category / Age Group	NLIM	ASCUS	LSIL	HSIL	ICC	Total	d.f	Chi-Square (χ^2) -Value
0-2	121	1	3	2	0	127	8	28.28** (p<0.01)
3-4	64	1	3	4	4	76		
5 and above	14	1	2	2	4	23		
Total	199	3	8	8	8	226		

[The critical value of χ^2 with (5-1) × (3-1) = 8 degrees of freedom at 0.01 level of significance is 20.09.]

Table 4 has depicted the distribution of patients according to their parity and categories of abnormal cytology. To test the association between these two parameters, Chi-Square (χ^2) test been applied. As the calculated χ^2 value is much higher than the critical value with 8 degrees of freedom at 0.01 level of significance i.e. $p<0.01$, so we can interpret that there exists a highly significant association between the parity of the patients and abnormal cytology.

5. Discussion

The average age of the patient included in the present study is 42.5 years. About 79% of the total cases were above 30 years which may suggest that women are reluctant to undergo pap test at an early age. The time they came for cytology test, cytological abnormality had already been developed. In this study, there were 27 cases of abnormal epithelial lesions (11.95%). The percentage of ASCUS is 1.3% and LSIL, HSIL

and invasive cancer each occupy 3.5% of the total sample studied. The incidence of HSIL and cancer increases with advancing age of the patient and in those who had more than 2 parity. In a hospital based study done by Banik U *et al.,* (2011) 8.18% revealed epithelial cell abnormality. Altogether 26 smears revealed high-grade lesions and malignancy, most of which were found to be in women belonging to the 30-39 and ≥ 45 age group. 53.96% women were in the 20-44 age group and 46.04% were in the ≥ 45 age group. Maryam Afrakhten *et al.,* (2007) had found the mean age of SIL positive cases was 46 years; while 57.61% of the abnormal cytology was detected in women having 3-5 parity. Maximum numbers of inflammatory smears were detected with 15-40 years age group and dysplasia was noted in the 41-78 years in the study done by Patel M M *et al.,* (2011).

Comparing with literature available, the present study highlights that the women of age 30 years and above may harbor cervical lesion of any grade which can easily be detected by cytological study by Pap test. The women having multiple pregnancies in their reproductive life had more ECA. It is noticed that most of the women attended the hospital due to specific complain.

6. Conclusion

Ours is a hospital-based study with less numbers of sample size. Even then it detects the iceberg of the cervical dysplasia and cancer. It also signifies that these women are unaware of the cytological screening by pap smear test. Hence, Cytological testing by Pap smear at regular interval should be efficiently brought under the cervical cancer screening program so that it helps the population at large and reduce the cervical cancer incidence and mortality.

Abbreviation used

CIN	Cervical intra epithelial neoplasia
IARC	International Association of research in cancer
OPD	Out patient department
GMCH	Gauhati medical college & Hospital
NILM	No intra epithelial lesion /malignancy
LSIL	Low grade squamous epithelial lesion
HSIL	High grade squamous lesion
ICC	Invasive cervical cancer

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