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Original Research Article

Prevalence of abnormal cervical cytology on liquid-based cytology in women attending gynecology OPD at Bangalore, Karnataka, India

Savithri D. R., Sankalpa A. J.*

Department of OBG, KIMS Hospital Research and Centre, Bangalore, Karnataka, India

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***Correspondence:**
Dr. Sankalpa A. J.,
E-mail: sankalpa.addamane@gmail.com

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ABSTRACT

Background: Cervical cancer ranks fourth among all malignancies and it is the most common gynecological cancer in women worldwide. In India, cancer cervix is the most common gynecological cancer and accounts for about 1.8 per 100000 populations. Precancerous lesion of cervix precedes carcinoma cervix and can be picked up on cytology. Cervical cytology has proven itself to be the main weapon of defense against this disease and is been in use since 50 years. Objectives of this study are to determine the socio-demographic characteristics of the women who had cervical cytology and to determine the prevalence of abnormal cervical smears on liquid-based cytology among women attending gynecology OPD at KIMS hospital and Research Centre.
Methods: This was a prospective observational study conducted at the Department of Obstetrics and Gynecology, KIMS Hospital and Research Centre. All data about the patient were recorded in a predetermined proforma. The cervical smear sample was collected using an endocervical brush and then immersed in a thin prep solution and was sent to cytopathology lab, Department of Pathology, KIMS Hospital and Research Centre for further processing using the EZIPREP technique.
Results: The study included 100 cervical smears in total. Females ranged in age from 21 to 65 years. All cervical smears were evaluated. The current study found inflammatory smears, infectious and smears with epithelial cell abnormalities. The most common organism noted was Candida albicans. The age group with the highest prevalence of epithelial cell abnormality was 41-50years. The most common epithelial cell abnormality in the present study is Low grade squamous intraepithelial lesion.
Conclusions: Out of the 100 LBC smears studied, the majority (67) of the smears studied were inflammatory. Epithelial cell abnormalities were found in 4 cases and the most common age group of epithelial abnormalities was the fifth decade.

Keywords: LBC, Pap smear, Abnormal cervical cytology

INTRODUCTION

Cervical cancer ranks fourth among all malignancies for women worldwide and it is the most common gynecologic cancer in women worldwide.[1] In India, cervical cancer is the most common gynecological cancer and accounts for about 1.8 per 100000 populations.[2] Precancerous lesions of cervix precedes carcinoma cervix and can be picked up on cytology.[2] Cervical cytology has proven itself to be the main weapon of defense against this disease and is been in use since 50 years.[3] Invasive cervical cancer is the end result of a long pathological process that starts with precursor lesions referred to as cervical dysplasia or squamous intraepithelial lesions (SIL).[4] With robust screening, early detection with appropriate treatment can be initiated.[5] For screening of cancer cervix, Pap smear evaluation with aeyer's spatula was routinely employed.

To address the limitations of Pap smear, Liquid-based, thin layer technology was later developed.[6] The timely introduction of Liquid-based cytology (LBC) aimed to improve the efficiency of gynaecological cytology by improving sensitivity, specificity, standardizing procedures, improving sample quality, assisting with screening, and concurrent HPV DNA testing. Currently, two LBC solutions are readily available: Thin Prep (Hologic, Marlborough, MA, USA) and BD SurePath (BD Diagnostics - TriPath, Burlington, NC, USA).[7]

Objectives

To determine the socio-demographic characteristics of the women who had cervical smear. To determine the prevalence of abnormal cervical smears on liquid-based cytology among women attending gynecological OPD at KIMS Hospital and Research centre.

METHODS

This was a prospective observational study conducted at the Department of Obstetrics and Gynecology, KIMS Hospital and Research Centre.

Sample size was 100 women. Study design: prospective cross-sectional study.

Inclusion criteria

Women attending gynecology OPD between the age group 21-65 years. Patients consenting for the study.

Exclusion criteria

Women who are on follow-up following a prior positive cervical smear. Women not willing for the study. Women with acute pelvic infection.

Sample collection

100 patients attending the gynecological OPD between the age group of 21-65 years meeting the inclusion and exclusion criteria were selected for the study. Women aged 21-65 years were offered screening of cancer cervix with LBC and optional HPV DNA testing. All patients opted for screening with cytology every three years. Each patient was briefed about the study. After obtaining the consent, detailed history about the patient including obstetric, menstrual and family history was taken. Patients were subjected to Per speculum examination and cervical smears were taken using the endocervical brush and the brush is then immersed in thin prep solutions and sent to cytopathological lab and were processed as per the prescribed protocol for EziPrep (EP) technique. Each sample was then evaluated.

RESULTS

The results are presented in two parts. First the socio-demographic characteristics of the women studied and then the cytological report of the study. Sixty one percent of the women were aged 41-50 years (Table 1).

Table 1: Age distribution.

Age (years)	Number	Percentage
21-30	07	7
31-40	18	18
41-50	61	6
51-60	11	11
61-65	03	3

Table 2: Demographic details.

Variable	Number	Percentage
Parity		
Nulliparous	06	6
Primiparous	23	23
Multiparous	51	51
Educational status		
Illiterate	06	6
Primary school (till 5th std)	12	12
High school (Till 10th std)	24	24
PUC	07	07
Degree	51	51
Postgraduation	0	0
Marital status		
Married	94	94
Unmarried	06	6
Family history of cervical cancer		
Yes	02	2
No	98	98
Awareness on cervical cancer		
Yes	05	5
No	95	95
Abnormal vaginal discharge		
Present	08	8
Absent	92	92

Table 3: Incidence of various cervical lesions in the present study.

Cervical lesions	Percentage
Inflammatory	67 (67)
Normal	14 (14)
Atrophic	02 (2)
Infections	13 (13)
Epithelial cell abnormalities	04 (4)

Twenty three percent were Primiparous, while 51% were Multiparous and 6% of the patients were nulliparous. Most of the women (51%) were studied upto degree. 94% patients were married. Only two patients (2%) had a

positive family history. Five (5%) had awareness on cervical cancer. Eight respondents (8%) had abnormal vaginal discharge and were treated according to the culture sensitivity.

Incidence of various cervical lesions in the present study is shown in table 3. The predominant smears were normal (67%) followed by inflammatory smears (14%) and Infections (13%).

Epithelial cell abnormalities accounted for 4% of the cases in the present study. The various epithelial cell abnormalities are, low grade intraepithelial lesion (LSIL), high-grade intraepithelial lesion (HSIL), atypical squamous cells of undetermined significance (ASC-US), Atypical glandular cells (AGC) and squamous cell carcinoma (SCC). The epithelial cell abnormalities noted in the study are LSIL followed by HSIL. Their incidence is shown in Table 4.

Table 4: Incidence of epithelial cell abnormality.

Epithelial cell abnormality	Incidence (%)
LSIL	2 (2)
HSIL	1 (1)
ASC-US	1 (1)
AGS	0 (0)
SCC	0 (0)

The 4 patients with epithelial cell abnormalities underwent colposcopic guided biopsy. One patient with LSIL on LBC, colposcopic guided biopsy was reported as chronic cervicitis and is on regular follow up since then. The other three patients, biopsy reports were consistent with the LBC reports and two of these patients underwent hysterectomy on request and one patient could not be followed up.

Infectious organisms noted during the study were *Trichomonas vaginalis*, *Candida albicans*, *Bacterial vaginosis* and *Herpes simplex virus*. The incidence of candida albicans (10%) being the highest amongst the various infectious organisms noted followed by *Trichomonas vaginalis* (2%).

Table 5: Various infections encountered in the study.

Infectious organism	Incidence (%)
Trichomonas vaginalis	02 (2)
Candida albicans	10 (10)
Herpes simplex virus	01 (1)
Bacterial vaginosis	01 (1)

DISCUSSION

In this investigation, aberrant cervical cytology was found in 4% of the participants. This is similar to the 2.6 percent prevalence reported in 1985.[8]

Cervical intraepithelial lesions are usually asymptomatic and are rarely found on routine examination. As the time taken for a CIN to progress to invasive cancer varies by individual, and the morphology of the lesion does not predict which lesions will progress or regress, follow-up is critical. According to reports, the transition from CIN1 to CIN3 takes six months to three years, with 57 percent of CIN1 lesions regressing, 32 percent persisting, and 11 percent progressing.

Awareness on cervical cancer is poor. Although 51% of the women screened had studied up to degree, surprisingly, only 5 out of the 100 women have heard of cervical cancer before. Of this five, only two had a fair knowledge of cervical cancer. There is great need therefore for an accelerated effort to improve public awareness on cervical cancer, and to make screening for cervical cancer a part of routine gynaecological examination, in all women aged twenty-one and above and less than 65 years.

When the present study was compared with other studies, it was noted that the incidence of epithelial cell abnormalities was similar to other studies as shown in Table 6.

Table 6: Comparison of cervical lesions with other studies.

Cervical lesions	Present study, 2021 (n=100) (%)	PushpaLataSachan et al[8], 2018 (n=1650) (%)	Sherwani et al[9], 2007 (n=160) (%)	Vikrant et al[10], 2015 (n=1000) (%)
Inflammation	67	42.6	-	0.011
Infection	13		8.75	0.164
ASC-US	01	2.9	-	0.012
AGC	-	-	-	0.001
LSIL	02	5.89	18.1	0.004
HSIL	01	0.48	4.	0.002
SCC	-	-	3.7	0.005

Inflammatory smears accounted for the majority of cases in our study, which is consistent with previous research by Pushpa Lata Sachan et al whereas, studies conducted by Vikrant et al. reported a majority of infected smears.[9-11] The proportion of inflammatory smears in this study was higher when compared to other studies and accounted for 67%. In a study by Vikrant et al, there were 112 cases of bacterial vaginosis, 24 cases of candida, and 6 cases of trichomonas.[11] The predominant organism in a study by Sherwani et al. is Candida and trichomonas by Singh et al which is similar to our study.[10,12] In a study by Siebers et al, HSIL in LBC smears accounted for 6.7% of the total cases, whereas in the present study, HSIL accounted for 1% of cases.[13] In a study by Vikrant et al, epithelial cell abnormalities were found in 25 cases.[11] In the present study, the most common age group for epithelial cell abnormalities was 41-50 years that is the fifth decade which correlates with two other studies by Chinaka et al and Nigerio et al.[14,15] These results were in contrast with studies done by Zhu et al, Ilter et al, Khamankar et al, Macharid et al, and Almonte et al in which the most common age group was fourth decade.[14-21]

CONCLUSION

The majority of the smears in the present study were inflammatory smears. Among infectious organisms, *Candida albicans* was most commonly seen followed by *Trichomonas vaginalis*. 4 cases showed epithelial cell abnormalities of which, LSIL has the highest incidence. 41-50 years age group was the most common age group with epithelial cell abnormalities. Epithelial cell abnormalities were easily detected in LBC smears because LB Cprovides a clear background for epithelial cell abnormal ity identification. The need of routine cervical screening i s emphasised in this study.

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