

Reporting of PAP Smear, using Sure Path Technique in Gauhati Medical College & Hospital, Guwahati, Assam

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Abstract: Often says cervix is a fertile soil for microbial organism and may turn to dysplasia or even growing of cancer. Cancer cervix is a leading cause of cancer related morbidity and mortality in India. However it can be diagnosed at the pre-invasive stage with repeated screening by Papanicolaou smears. This study was performed for a one year period from February 2017 to January 2018. Total 458 women between age group of 15-75 years who presented with various Gynaecological problems were screened by pap smears (Manual Sure path). Maximum number of women belonged to 31-40 years of age group (39.3%). When categorized according to Bethesda 2014 System, maximum number of cases belonged to infectious group (49.34%). Of the epithelial anomalies, Atypical squamous cells of undetermined significance (ASCUS) was reported in 7.86% cases. There was relatively a higher proportion of inadequate smears (17.47%) in our study

Keywords: Cancer cervix, Papanicolaou, Sure Path, Bethesda system

1. Introduction

Cancer of uterine cervix is a leading cause of cancer related morbidity and mortality worldwide. Approximately 2 million women are suffering from cancer cervix over the world at a time. Every year in India 122,844 women are diagnosed with cervical cancer and 67,477 die from the disease.

Prevention is better than cure holds true for cervical cancer as known to everyone. Screening with pap smear (Secondary prevention) can identify early malignant lesions and can reduce mortality and morbidity.

The Pap test was introduced in 1943 by George Papanicolaou. It is a simple test performed at the outpatient department. It is estimated that it can reduce the incidence of cancer cervix by 70%. Though pap smear is just a routine screening test, the overall sensitivity in detection of High grade squamous intra-epithelial lesion (HSIL) is as high as 70-80% and has been proved very effective in differentiating between inflammatory, pre malignant and malignant lesions. **Thus the epithelial changes can be treated, preventing cervical cancer.** The Bethesda system 2014 for reporting the results of cervical cytology was developed with introduction of some newer terminology that could provide clear guidance for clinical management.

2. Literature Survey

Sunita Bamanikar et al from D.Y. Patil Medical college, Pune surveyed 560 pap smears. They found maximum number of cases in the age group of 31-40 years. There were 5.71% inadequate samples. 498 smears were reported as Negative for intraepithelial lesion or malignancy (NILM). Only 6.92% cases were reported to have epithelial abnormalities.

Mulazim Hussain Bukhari et al from King Edward University, Lahore screened 1000 women for an one year period. The overall frequency of normal, inadequate, neoplastic and infective smears were 50%, 1.8%, 10.2% and 38.35 respectively. Most of the women were in the post menopausal age group.

Suspana Hirachand et al from Kathmandu Medical college and hospital in their study found 68.95% inflammatory smears, 21.99% normal smears, 0.51% ASCUS, 0.15% LSIL, 0.29 HSIL and 0.15% Squamous cell carcinoma cases. Only 0.36% cases were reported as inadequate.

Ashok Verma et al from Rajendra Prasad medical college, Himachal Pradesh screened 200 women in the age group of 21-65 years of age group. Mean age of the patients were 38.6 years. Most of the women were parous, had poor economic status. Vaginal discharge was the commonest complaint followed by inter-menstrual bleeding. 56% smears were reported as NILM, 32.5% inflammatory, 1.5% had other non-specific findings. ASCUS was reported in 1%, LSIL in 5.5% and HSIL in 2.5% women. K. Bhavani et al from Visakhapatnam, Andhra Pradesh examined 770 pap smears. They found maximum number of cases in the 31-40 years of age group. Most of the cases were categorized into NILM. Among the five organisms, they found Trichomonas and Candida in 38 (4.9%) cases each. Epithelial cell abnormalities were found in 61 (7.92%) cases. Among epithelial anomalies, LSIL was the commonest 27 cases (3.57%).

3. Materials and methods

The study was conducted in the Clinical section of department of Pathology, Gauhati medical college in collaboration with the department of Obstetrics and Gynaecology. The study period was one year from February

2017 to January 2018. A total 458 women who attended the Gynaecology OPD with various gynaecological problems who consented to participate in the study were included.

Inclusion criteria

All women presenting with various gynaecological problems like, vaginal discharge, irregular menstrual bleeding, excessive menstrual bleeding, pain abdomen with vaginal discharge, unhealthy cervix, inter menstrual bleeding, post coital bleeding etc were included.

Exclusion criteria

Women not willing to participate in the study, Known case of carcinoma cervix or treated case of carcinoma cervix were excluded from the study.

Informed consent was obtained and a questionnaire was given to fill up. It included details of the patient particulars with various issues related to important socio demographic parameters. Chief presenting complaints, past and present obstetric and gynaecological history, exposure to risk factors related to developing carcinoma cervix etc were obtained.

Pap smears were made with the conventional method according to standard medical literature. The participants were prepared in lithotomy position. A sterile bivalve speculum of appropriate size was inserted into the vagina without the application of any lubricants. The smears were obtained with the help of Ayer’s spatula and cytobrush to collect specimen from the squamocolumnar junction.

Slide processing procedure for manual Sure path pap:

- 1) BD Surepath pre coated slides are identified with pencil marking.
- 2) Labelled BD Sure path slide is placed on the cassette.
- 3) 1.5 ml of density reagent is added on the BD pre-coated slides directly
- 4) BD Sure path sample vials are vortexed for a minimum of 15±5 seconds at 3000 rpm
- 5) 1ml of prevortexed BDSurepath sample is added slowly, touching the walls of the setting chamber with the help of a pipette.
- 6) Complete cassette assembly is put into the centrifuge bucket.
- 7) Centrifugation is done at 2300 rpm for 5 minutes.
- 8) Subsequently staining is done and smears are sent for microscopic examination.

4. Results

A total of 458 pap smears were examined between a one year period of February 2017 to January 2018. Maximum number of cases were in the age group of 31-40 years(39.3%). It was followed by 41-50 years of age group with 35.15% cases. The youngest patient was of 15years and oldest was 75 years of age.

56.08% cases presented with the chief complaint of discharge per vaginum. Pain abdomen was present in 52.16% cases. Irregular menstrual bleeding was found in 15.05% cases.

48.04% cases had first sexual exposure in between 15-20 years of age group. 85% women were married. 75% cases were multipara with only 10% nulliparous women. Regarding other demographic parameters, 50% study subjects had a monthly income between 5000-10,000 rupees per month. None of the subjects had a monthly income of more than 50,000 rupees per month. 40% subjects were HSLC pass, while 30% had gone to Primary school only. 60% women were Hindu while 35% were Muslims. 80% women had used Oral contraceptive pills as a method of contraception. IUCD users were 10%.

48.03% cases were categorized as Inflammatory smears, 24.02% as Negative for intraepithelial lesion or malignancy(NILM), Organisms were reported in 16 smears with 8 cases reported to have Trichomonas vaginalis, 6 smears had evidence of Bacterial vaginosis and 2 cases having Candida infection. Epithelial abnormalities were present in 9.18% cases. ASCUS was the most common anomaly and was present in 7.86% (36) cases. There were 3 cases each(0.66%) of Low grade squamous intraepithelial lesion(LSIL) and Atypical squamous cells cannot exclude HSIL(ASC-H). The relative proportion of unsatisfactory smears and inadequate smears were high in our study. There were all total 80 smears (17.47%) reported to be unsatisfactory for evaluation or inadequate.

Table 1: Age distribution of patients

Age group(Yrs)	No of cases	Percentage (%)
10-20	9	1.97
21-30	56	12.23
31-40	180	39.3
41-50	161	35.15
51-60	35	7.64
61-70	15	3.28
71-80	2	0.44

Table 2: Age at first sexual exposure:

Age group(Yrs)	Percentage (%)
10-15	5.15
16-20	48.04
21-25	37.11
26-30	10.1

Table 3: Chief complaints

Chief complaint	Percentage (%)
Vaginal discharge	56.08
Pain abdomen	52.16
Irregular menstrual bleeding	15.05
Unhealthy looking cervix	13.19
Post menopausal bleed	9.07

Table 4: Cytological evaluation of cases:

Pap smear	Number of cases	Percentage (%)
NILM	110	24.02
Inflammatory	220	48.03
ASCUS	36	7.86
Organism	6	1.31
ASC-H	3	0.66
LSIL	3	0.66
Unsatisfactory	80	17.47

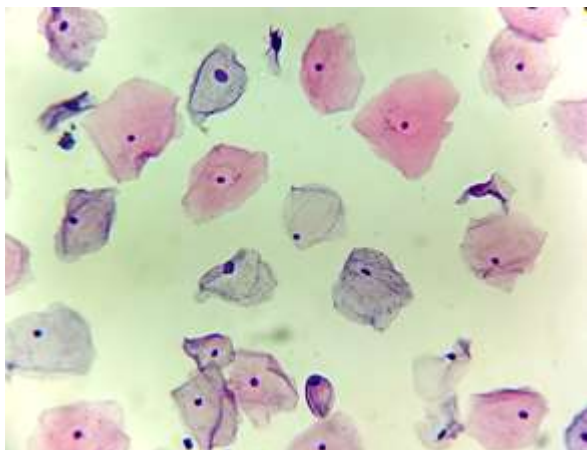


Figure 1: Normal BD SurePath pap smear showing both superficial and intermediate squamous cells.(40x10)

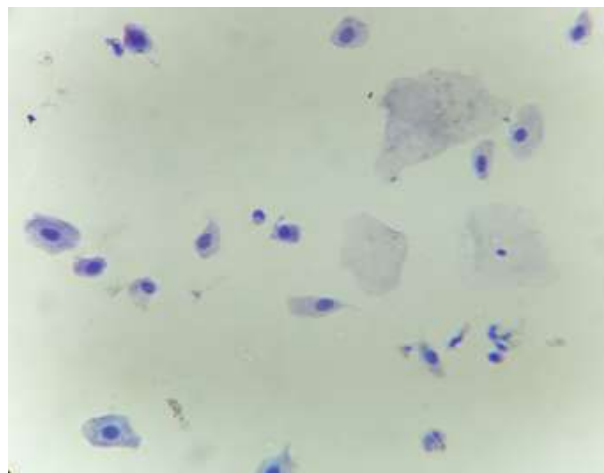


Figure 4: BD SurePath smear showing an atrophic smear with presence of predominantly squamous metaplastic cells.(40x10)

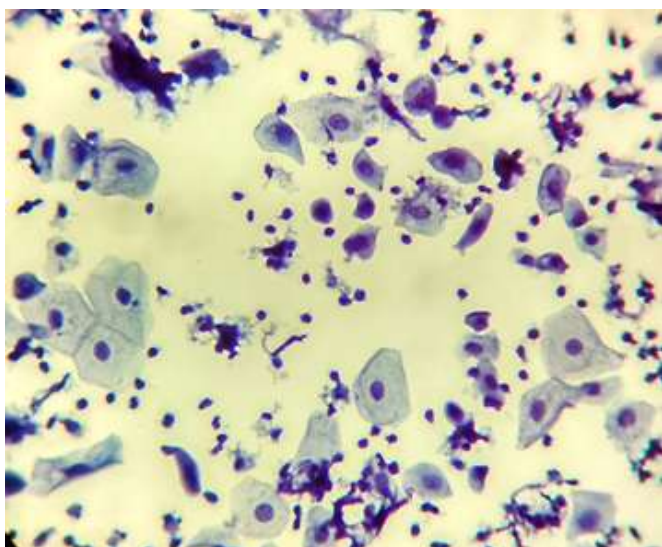


Figure 2: BDSure path smear shows mild nuclear enlargement with mild hyperchromasia,diagnosed as ASCUS(40X10)

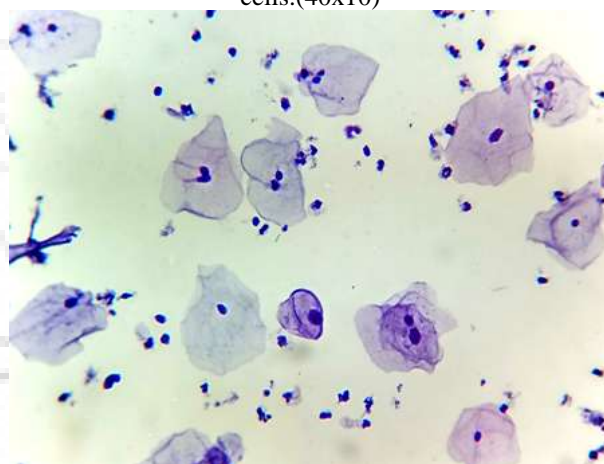


Figure 5: BD SurePath smear shows a case of inflammatory smear with presence of plenty of polymorphonuclear leucocytes(40x10).

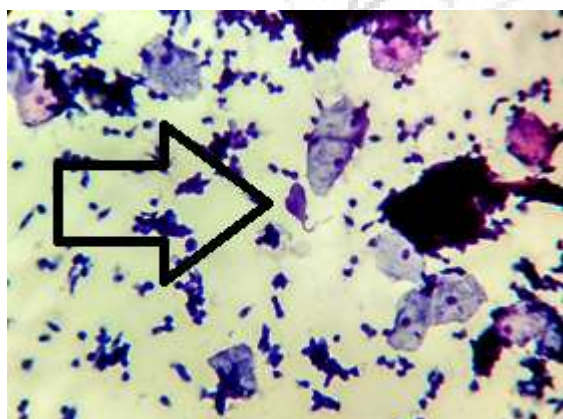


Figure 3: BD Surepath smear showing a Trichomonas in the centre of the smear,diagnosed as NILM(40x10)

5. Discussion

Cervical cancer is the most widely used tool to screened cancer in both developed and developing countries. Population based cervical cytology screening programmes offering Papanicolaou testing every 3-4 years have reduced cervical cancer incidence and mortality by up to 80% in developed countries in last five decades. Cervical cancer is on the declining trend in India according to the population based registries; yet it continues to be a major health problem in India.

Maximum study subjects in our study were screened for the first time and were unaware of such screening programme.

Maximum women belonged to 31-40 years of age group. Similar finding was seen in study by Gaur BS et al from LN Medical college, Madhya Pradesh. Sunita Bamanikar et al from DY Patil medical college, Pune also found maximum number of women in this age group.

Maximum number of subjects presented with a chief complaint of abnormal vaginal discharge(56.08%).This was also the finding of Bukhari et al from Lahore, Pakistan.Sunita Bamanikar et al from DY Patil medical college also recorded

abnormal vaginal discharge as the most common presenting complaint(51.8%) cases. It was followed by pain abdomen (40.9%) which was similar to our finding.

When evaluated cytologically and classified according to Bethesda 2014 system, maximum number of cases fell in the NILM, Inflammatory group(48.03%). While epithelial lesions constituted 9.18% cases. Similar findings were found in the study of Sunita Bamanikar et al from DY Patil medical college, Pune. Similar to our study they also reported ASCUS as the most common epithelial cell abnormality (2.32%). Only 0.66% cases had a low grade squamous epithelial lesions. Whereas many studies from Middle Eastern countries reported a higher proportion of Squamous intraepithelial lesions (4.9%). This may be due to possible religious factors and lack of awareness and screening programme. While another study by Gaur BS et al from Madhya Pradesh differed from our study who reported 75.4% cases as NILM. There was a higher percentage of ASCUS (8.0%) and LSIL(7.4%). This difference may be attributed to the factors already mentioned above.

6. Conclusion

Cervical cancer is one of the most common malignancies in women of developing countries like India. However incidence of Cancer cervix has decreased significantly over the past few decades after starting of mass screening programme and awareness campaigns.

This study emphasized the importance of Pap smears screening for early detection of pre malignant and malignant lesions of cervix. However we propose that larger studies are required to estimate the pattern of cervical cytological abnormalities along with detection of common HPV strains in cervical cancer in Indian population, as this knowledge would be useful for prevention of HPV infection either by vaccines or future targeted therapy.

7. Conflicts of interest

None

References

- [1] Koss L, Melamed M. Squamous cell carcinoma of the Uterine cervix and related precancerous lesions in Diagnostic cytology of organs. In: Koss' diagnostic cytology and its histopathologic bases. 5th ed. Philadelphia: JB Lippincott Company; 2005. p. 282-395.
- [2] Solomon D., Nayar R. — The Bethesda System for Reporting Cervical Cytology: Definitions, Criteria, and Explanatory Notes. 2nd Ed. New York, NY, Springer; 2004: v-vii.
- [3] Leopold K. — The New Bethesda System for Reporting Results of Smears of Uterine cervix. Journal of National Cancer Institute; **82**(12):988-990, 1990.
- [4] Kumar V, Abbas AK, Fausto N, Mitchell RN. Robbins Basic Pathology. 8th ed. Saunders Elsevier; 2007:718-721.
- [5] Cervical Cancer Screening. The American College of Obstetricians and Gynecologists. 2013.
- [6] National Centre for Disease Informatics Research, National Cancer Registry Programme, ICMR Time Trends in Cancer Incidence Rates, 1982-2010
- [7] Bangalore, India. NCDIR-NCRP (ICMR)2013
- [8] Papanicolaou GN, Traut HF. The diagnostic value of vaginal smears in carcinoma of the uterus. Am Jr Obstet Gynecol. 1941;42:193-205.
- [9] Patel M, Pandya A, Modi J. Cervical Pap smear study and its utility in cancer screening to specify the strategy for cervical cancer control. National Journal of Community Medicine, 2011; 2: 49-51.
- [10] Pradhan B., Pradhan S.B., Mital V.P. — Correlation of Pap smear findings with clinical findings and cervical biopsy Kathmandu University Medical Journal; Vol. 5, No. 4, Issue 20; 461-467, 2007.
- [11] The 2001 Bethesda System. Terminology for reporting results of cervical cytology. JMA. 2002; 287: 2114.
- [12] Patel M, Pandya A, Modi J. Cervical Pap smear study and its utility in cancer screening to specify the strategy for cervical cancer control. National Journal of Community Medicine, 2011; 2: 49-51.
- [13] Bamanikar SA, Baravkar DS, Chandanwale SS, Dapkekar P. Study of cervical pap smears in a tertiary hospital. Indian Medical Gazette. 2014.
- [14] Verma I, Jain V, Kaur T. Bethesda system for cervical cytology in unhealthy cervix. J Clin Diagn Res. 2014;8(9).