



Original Research Article

Evaluation of Pattern of Cervical Cytology in a Tertiary Care Hospital - A Four Years Study

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ABSTRACT

Background: Cancer cervix is the second most common cancer in women in the world and one of the leading malignancies seen in Indian women. Early detection and eradication of cancer and its precursor lesions is the mainstay for control of cervical cancer. Pap smear is the cost effective means of screening for cervical neoplastic as well as non-neoplastic lesions.

Aim:-To detect premalignant and malignant lesions of cervix & diagnosis of non-neoplastic conditions such as inflammation and infections of cervix, vagina & occasionally endometrium.

Material & methods: The study was conducted from Jan. 2009 to Dec.2012 in a tertiary care hospital & included 1320 patients. Detailed clinical history including chief complaints, LMP and findings of P/V and P/S examination were noted. Pap smears were taken with proper technique, stained with Papanicolaou staining method and reported according to The Bethesda System 2001.

Results: Out of 1320 pap smears evaluated majority (48.2 %) of patients were multiparous between 31-40 yrs of age group (38.8 %) having gynecological problems. Leucorrhoea was the commonest complaint (70 %) followed by low backache (28.78 %). On P/S examination, healthy cervix was found in 47.88 % cases followed by cervical erosion (31.21%). Negative for intraepithelial lesion or malignancy was the commonest interpretation (91%). Epithelial cell abnormality was found in 6.95 % cases including ASCUS (2.12%), LSIL (2.12%), HSIL (1.81%), and SCC (0.90 %)

Conclusion: The study emphasizes need for early screening to diagnose preinvasive lesions and infections in females from reproductive age group and from high risk cases.

Key Words: Pap smear, LSIL, HSIL, SCC

INTRODUCTION

Cancer cervix represents the most common cause of mortality and morbidity. It is the third most common cause of cancer deaths in females worldwide. ^[1] It is preventable but not prevented; this is the reality of cervical cancer in developing countries which constitutes 80% of all cases

of cancer cervix. The commonest age group affected is between 35 to 65 yrs. India accounts for 18% of the total burden. ^[2] In India it is estimated that the numbers of cases are over 1,40,000. ^[3] Cancer cervix is the most studied cancer and has a very long latent phase of about 10yrs. So cytology is a proven tested tool for making an early

diagnosis and treating it in early stage. Thus, cytology is a “simple, less expensive diagnostic tool suitable for implementation in India”. [2] The introduction of cervicovaginal cytology screening programme into communities in the 1950s and 1960s resulted in dramatic decrease in the cervical cancer incidence and mortality. [1]

In our country, no nationwide or state wide screening programme exists for cervical cancer due to paucity of manpower in the field of cytology and also due to other resource constraints. Thus, for the developing countries, institution based screening programmes, mobile cancer detection camps have been suggested as an alternative strategy for early detection of cervical cancer until cytology screening will be available for all women at risk. [4]

The utilization of screening tests like cervicovaginal cytology (pap test) is further justified by their relatively low cost and widespread acceptance by women. Although the sensitivity of the single pap test, conventional or liquid based, has been reported to vary between 51% to 88%, repeated testing at intervals throughout a woman’s life has a very high likelihood of identifying those at risk for cancer. [1, 5] With all the above views, the present study has been carried out to screen and correlate between clinical symptoms and pathological analysis by cervicovaginal cytology.

MATERIAL & METHODS [2, 5, 6]

The present study was conducted in Department of Pathology from Jan. 2009 to Dec. 2012 and included 1320 cervicovaginal smears for evaluation. A detailed clinical history regarding chief complaints, menstrual history (LMP and PMP) and parity was noted. Findings of per-speculum examination and per-vaginal examination were taken into consideration. It was ensured that, no douche or local antiseptic

application, and internal examination was performed before collecting the smear. The patient was placed in dorsal lithotomic position and a bivalve Cusco’s unlubricated speculum was introduced in the vagina and the cervix was visualized. The longer projection of the modified Ayre’s spatula was placed in the cervical os and rotated through 360°. The cellular material was quickly but gently smeared on previously labelled glass slides. The glass slides were immediately placed in a coplin jar containing fixative i.e. mixture of equal amount of ether and 95% ethyl alcohol. After 20 minutes, smears were stained using Papanicolaou method. The smears were interpreted according to The Bethesda System 2001. [7]

Statistical analysis was done by calculating prevalence as number of positive cases divided by number of tested samples. Cytopathological analysis was reviewed with age distribution and parity. Percentage distribution of each lesion was calculated out of abnormal and total pap smears.

RESULTS

A total number of 1320 cases of pap smears were received and interpreted over a period of 4 years. Age group ranged from 20 years to 68 years. Maximum no. of patients (38.8%) were in the age group of 31-40 years (fourth decade) followed by 31.21% in the third decade (Fig 1). Youngest patient was 20 years old. Among 1320 cases 636 (48.2%) was multipara (para 3-4) having gynaecological complaints followed by para 1-2 which constituted 600 (45.45%) cases (Fig. 2). The most common presenting complaint was white discharge per vaginum (leucorrhoea) in 924 (70.0 %) patients (Fig. 3). History of low backache was present in 380 (28.78 %), pain in abdomen in 280 (21.21 %), irregular P/V bleeding in 136 (10.30 %) and 28 (2.12 %) patients had complaint of dyspareunia. Majority of the

patients in the reproductive age group presented with leucorrhoea. Irregular P/V bleeding and backache were the major complaints in perimenopausal and postmenopausal women. On per speculum examination no gross lesions (healthy cervix) were found in 632 (47.88 %), hypertrophied or unhealthy cervix in 248 (18.8%), cervical erosion in 412(31.21%) and visible growth on cervix in 12 (0.90%) patients (Fig. 4).

Out of 1320 cases 1200(91%) were reported as negative for any intraepithelial lesion or malignancy (Table 2). In 28 (2.12%) patients smears were inadequate for reporting. Out of 1200 smears negative for intraepithelial lesion or malignancy, 194 (16.16 %) showed normal cytology findings,

48 (4.00%) changes of atrophy, 4 (0.33%) changes of repair and 954 (79.34 %) showed inflammatory smear. Out of 954 inflammatory smears, 920 (76.67%) showed non-specific inflammation, 12 (1.00%) had features of bacterial vaginosis, 12(1.00%) had features of trichomonas infection and 8 (0.67%) showed candida infection. Cytology findings suggestive of HSV were found in 02(0.16 %) cases. Squamous intraepithelial lesion was reported in 92 (6.95 %) cases including ASCUS in 28(2.12 %), LSIL in 28 (2.12%), HSIL in 24(1.81 %). 12 (0.90%) cases showed squamous cell carcinoma (Table1).Patients with HSIL and squamous cell carcinoma were multipara and from older age group.

Table No.1:-Pap smear interpretation by Bethesda system (2001).

Interpretation / Results	No. of cases (%)
Negative for intraepithelial lesion or Malignancy	1200 (91.0%)
ASCUS	28 (2.12%)
LSIL	28 (2.12%)
HSIL	24 (1.81%)
Squamous cell carcinoma	12 (0.90%)
Unsatisfactory	28 (2.12%)
Adenocarcinoma	00 (0.00%)
Total	1320 (100%)

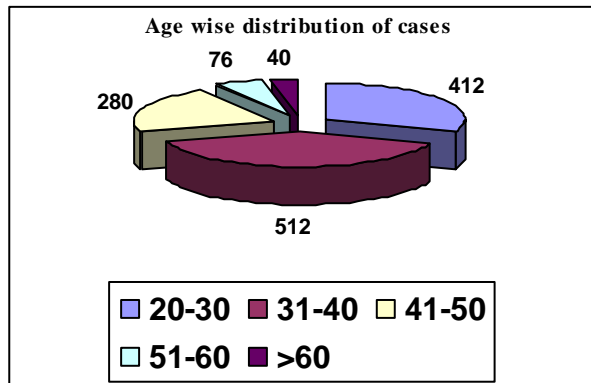


Fig. No.1. Age wise distribution of cases.

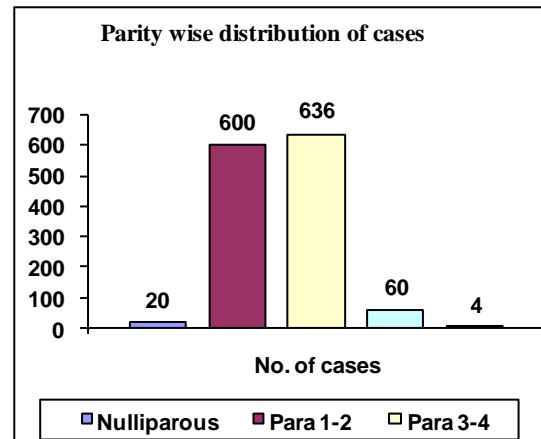


Fig. No.2. Parity wise distribution of cases.

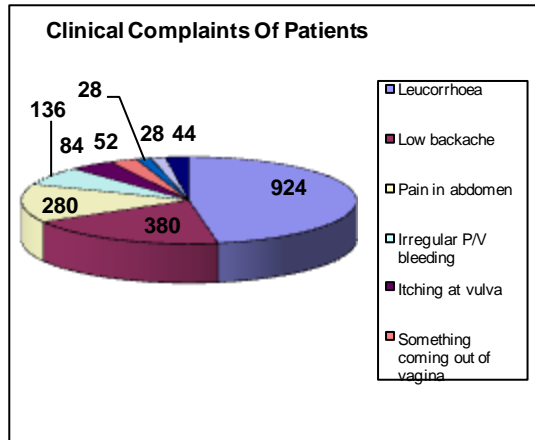


Fig. No.3. Clinical complaints of patients.

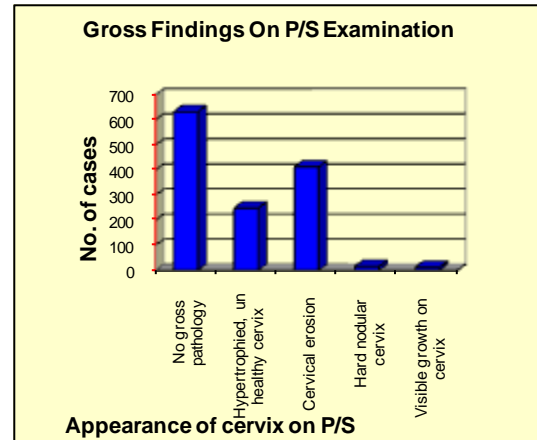


Fig. No.4. Gross findings on P/S examination.

Table No.2:- Pattern of Negative for Intraepithelial Lesion or Malignancy.

Interpretation / results	No. of cases (%)
Nonspecific Inflammatory smear	920 (76.67%)
Trichomonas vaginalis	12 (1.00%)
Candida albicans	08 (0.67%)
Repair	04 (0.33%)
Atrophy	48 (4.00%)
Bacterial Vaginosis	12 (1.00%)
Negative smear	194 (16.16%)
HSV	02(0.16%)
Total	1200 (100%)

Table No.3:-Comparison of Results of Various Studies

Author	NILM %	ASCUS %	LSIL %	HSIL %	SCC %	AGUS & ADC	Unsatisfactory %
Ghazal-Aswad et al,2006 [11]	95	2.9	1.1	0.9	0.0	0.0	-
Layla et al, 2007 [19]	95	1.84	1.0	0.55	0.37	0.44	2.8
Mulay et al, 2009 [14]	98.08	0.64	0.21	0.16	0.06	--	0.73
Balaha et al,2011 [21]	90.71	5.61	0.16	1.28	0.64	0.48	3.28
Bal et al 2012 [18]	66	0.3	2.7	0.3	1.0	0.3	4.1
Nikumbh et al,2012 [15]	94.20	0.96	0.96	1.98	1.60	0.40	--
Bukhari et al,2012 [22]	88	1.0	4.6	2.2	1.4	0.4 & 0.6	1.8
Atilgan et al,2012 [23]	95	1.9	0.5	0.1	0.0	0.2	2.1
Present study	91	2.12	2.12	1.81	0.9	0.0	2.12

NILM-Negative for intraepithelial lesion or malignancy,ASCUS- Atypical squamous cells of undetermined significance,LSIL-Low grade squamous intraepithelial lesion,HSIL- High grade squamous intraepithelial lesion ,SCC- Squamous cell carcinoma,AGUS- Atypical glandular cells of undetermined significance,ADC- Adenocarcinoma.

DISCUSSION

Dr. George Papanicolaou, “the father of cytology” prevailed upon his wife, Mary to contribute the first human specimen, the Papanicolaou test. [2] Cancer cervix is the most studied cancer. In all probability cervical cancer is the only gynaecological cancer that satisfies the well-recognized WHO criteria for implementation of a screening program. [8] It has a very long pre-invasive phase, begins as mild dysplasia and

proceeds to invasive cancer. So it can be detected and treated in early stage which is very cost effective than treating it as invasive cancer. The goal of cervical cancer screening is to detect preinvasive lesion, results in reduction of incidence and mortality from invasive cervical cancer. This concept has been highly successful over last 50 yrs. [9, 10] Screening programs for cervical cancer have been instituted in developed countries for decades and over a period of time have been shown to be effective in reducing the overall mortality from this disease. [7] The present study was carried out as a “screening programme” for early detection of cervical cancer in tertiary care hospital. Total 1320 cases of cervicovaginal cytology were screened. Majority of the patients (38.8%) were from the age group of 31 to 40 years and 31.21% patients form the age group of 20 to 30 yrs. Similar findings were also noted by Ghazal-Aswad et al, [11] Misra et al [12] & Mostafa et al [13] i.e. the most common age group screened was 31 to 40 yrs. 41-50 yrs was the commonest age group screened in Indian population by Mulay et al. [14] Multiparous women with gynaecological problem (48.2%) were the most common in the present study. Misra et al [12] & Nikumbh et al [15] also observed that multiparous women (57% & 48 %) were commonly affected. Prevalence of SIL was maximum (6.9%) in high parity group bearing ≥ 3 children, as per Misra et al. [12] Chitale et al [16] noted 96% patient of cancer had two or more than two children. Caslaneda et al [17] had also stressed the number of pregnancies as a risk factor for developing cervical dysplasia. Present study also reveals increased prevalence of SIL in women with high parity. Early marriage (54.16%), high parity (53.04%) and low socioeconomic status (45.38 %) were risk factors responsible for high prevalence of epithelial abnormalities in our population.

Commonest clinical presentation was leucorrhoea (70.0%) in younger age group. Majority of the patients had more than one symptom. In older age group backache and pain in abdomen constituted 28.78 % and 21.21% of cases respectively. 10.30% cases presented with irregular p/v bleeding. Bal et al, [18] Misra et al [12] & Nikumbh et al [15] also revealed similar findings. On P/S examination, 47.88% patients had no gross lesion. Cervical erosion was seen in 31.21% cases. The most common gross lesion was hypertrophied cervix (18.8%) & visible cervical growth (0.90%) in patients with squamous intraepithelial lesion and carcinoma of cervix. Majority of the patients had no gross pathology on p/s examination, as the study was conducted as a screening programme. Our findings are in concordance with Bal et al, [18] Misra et al [12] & Nikumbh et al. [15]

Percentage of inadequate or unsatisfactory smears ranged from 0.7 % to 4.1 % in various studies. [11-23] 2.12% of the smears were unsatisfactory in the present study due to cells obscured by RBC and inflammation which is in concordance with Layla et al [19] & Atilgan et al. [23] ASCUS was reported in 2.12%, LSIL in 2.12% and HSIL in 1.81% of cases which were in concordance with Ghazal-Aswad et al, [11] Bal et al [18] & Nikumbh et al [15] respectively. ASCUS/LSIL ratio in our study was 1 (normally should be less than 3) which is good quality measure as has been suggested by the authors of The Bethesda System. 0.90% cases were reported as squamous cell carcinoma which is in concordance with Bal et al [18] & Bukhari et al. [22] No case of AGC and adenocarcinoma was reported in our study. Prevalence of epithelial abnormalities around the world showed wide variation from 0.98% to 15.5%. [14] The possible reasons could be variation in criteria, quality checks used & intrinsic differences in the population

studied including risk factors & sample size studied. The abnormal smears such as HSIL and squamous cell carcinoma were advised biopsy i.e. colposcopic biopsy or cone biopsy. However due to lack of proper follow up of most of cases, cytohistopathological correlation of abnormal smears could not be done.

Only 10 cases reported as HSIL were followed up, out of which three cases were confirmed as moderate and two as severe dysplasia on histopathology. Three cases were diagnosed as CIN I. Squamous cell carcinoma was reported in two cases. Disparity between cytological and histopathological diagnosis might be due to inadequate sampling of biopsy specimen or due to incorrect method of taking cervical smear.

Out of 12 cases of squamous cell carcinoma, 8 were confirmed as squamous cell carcinomas on histopathology. Four cases of squamous cell carcinoma were reported as severe dysplasia on histopathology. So inadequate sampling of biopsy, incorrect method of taking cervical smear and incorrect interpretation are main reasons for incorrect diagnosis. In the present study, majority of the smears (91.00%) interpreted as “negative for intraepithelial lesion or malignancy” were analyzed further and majority (76.67%) showed non-specific inflammation. Atrophic vaginitis was noted in 4.0% cases. 1.0% cases of trichomonas vaginalis, 0.66% cases of Candida albicans and 1.0% of bacterial vaginosis were reported. Similar results were also noted by Kashyap et al^[20] & Nikumbh et al^[15] considering the use of Pap smear as “Gold standard” for detection of cervical cancer as well as infections in population. Reduced prevalence of infections may be due to injudicious use of antibiotics in the treatment of leucorrhoea.

A major challenge for developing countries is to formulate a screening

program that is based upon available resources and which is easily available to a large population of society, particularly the rural populations. With the active participation of medical personnel, paramedical workers and the local population, a cost effective screening program for cervical cancer needs to be formulated and implemented.^[8] Many screening tests are available for cervical cancer like liquid based cytology, automated cervical screening techniques, neuromedical systems, HPV testing, Polar probe, Laser induced fluorescence, Visual inspection of cervix after applying Lugol’s iodine (VILI) or acetic acid (VIA), speculoscopy, cervicography. Exfoliative cervicovaginal cytology has been regarded as the gold standard and cost effective for cervical cancer screening programs in developing countries like India.

CONCLUSION

To conclude the natural history of cervical cancer represents a stepwise progression from a histologically normal cervix to frank invasive cancer. So the study emphasizes early and regular screening of females of reproductive age group and high risk population by pap smear to reduce morbidity and mortality from cervical cancer.

REFERENCES

1. Waxman A.G. Guidelines for cervical cancer screening, History and scientific rationale. Clinical obstetrics and gynecology 2005; 48:77-97.
2. Miniello G, Saraiya U. Historical survey and Basic cytology. Colour atlas of cytology and colposcopy, 1st ed, CBC Pub 1999:1-22.
3. Juneja A, Sehgal A, Sharma S, Pandey A. Cervical cancer screening

- in India :Strategies revisited .Indian J Med Sci 2007;61(1):34-47.
4. Kashyap V, Murthy NS et al. Interobserver agreement in the diagnosis of cervical smears. Indian J Pathol Microbiol 1995; Oct:375-382.
 5. Koss L G. Gynecologic cytology in historical perspective: Diagnostic Cytology and its Histologic Bases, 4th ed. Philadelphia, JB Lippincott 1992 :1-6.
 6. Culling CFA, Allison RT, Barr WT. Papnicolaou method. Cellular pathology technique, 4th ed. Butterworth & W 1985:491-492.
 7. Soloman D, Davey D, Kurman R, et al. The 2001 Bethesda system: Terminology for reporting results of cervical cytology. JAMA 2002; 287:2114-2119.
 8. Rajendra A Kerkar, Yogesh V Kulkarni .Screening for cervical cancer: an overview. J Obstet Gynecol India Vol. 56, No. 2 : March/April 2006 Pg 115-122
 9. Gustafsson L, Ponten J, Bergstrom R et al. International incidence rates of invasive cervical cancer before cytological screening. Int J Cancer 1997; 71:159-165.
 10. Hakama M. Screening for cervical cancer: Experience of Nordic Countries. In new development in cervical cancer screening and prevention. Ed by E Franco, J Monsonogo London, Blackwell Science 1997:190-199.
 11. Ghazal-Aswad S, Gargash H, Badrinath P et al. Cervical smear abnormalities in the united Arab Emirates. A pilot study in the Arabian Gulf. ActaCytol 2006;50:41-47
 12. Misra JS, Agrawal SL, Pandey S. Risk factor associated with squamous intraepithelial lesion of cervix. Journal of Cytology 2002; 19(3):153-158.
 13. Mostafa M, Srivannaboon S, Rachanawutanon in. Accuracy of cytological findings in abnormal cervical smears by cytohistologic comparison. Indian J Pathol Microbiol 2000;43(1):23-29
 14. Mulay et al. A comparative study of cervical smears in an urban hospital in India and a population based screening program in Mauritius. Indian J Pathol Microbiol 2009; 52(1):34-37.
 15. Nikumbh et al. Cervicovaginal Cytology: Clinicopathological and Social Aspect of Cervical Cancer Screening in Rural (Maharashtra) India. International Journal of Health Sciences & Research; Vol.1; Issue: 2; Jan. 2012:126-130.
 16. Chitale AR, Bhuvaneshwari, Krishna UR. Histological assessment of cytological abnormal smears. Ind. Cancer 1976; 13:324.
 17. Caslaneda – Iniguer MS, Tuledo Cisneros R: Risk factors for cervicovaginal uterine cancer in women in Zacalecosalud Publica de Mexico 1998; 40(15):330-338.
 18. Bal et al. Detection of abnormal cervical cytology in Papanicolaou smears. Journal of Cytology; Vol.29;Issue1;Jan.2012:45-47
 19. Layla S, Abdullah. Pattern of abnormal pap smears in developing countries: A report from a large referral hospital in Saudi Arabia using the revised 2001 Bethesda System. Ann Saudi Med 2007; 27(4):268-272.
 20. Kashyap V, Bhambhani S. Coexistence of HPV infection with lower genital tract infections in cervical smears. Journal of cytology 2002; 19(3):171-172.

21. Bahala et al. Cytological pattern of cervical papanicolaou smears in eastern region of Saudi Arabia. Journal of cytology 2011; 28(4):174-177.
22. Bukhari et al. Clinicopathological importance of Papanicolaou smears for the diagnosis of premalignant and malignant lesions of the cervix. Journal of cytology 2012; 29(1):20-25.
23. Atilgan et al. Evaluation of cervical cytological abnormalities in Turkish population. Indian journal Of Pathology and Microbiology 2012; 55(1):52-55.

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