International Journal of Health Sciences and Research

Original Research Article

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

Kishor H. Suryawanshi¹, N.V. Dravid², Rajshri P. Damle¹, A.S. Gadre³, Priya S Bagale¹, Neelam Ahire³

¹Assistant Professor, ²Professor & Head, ³Assistant Lecturer, Department Of Pathology, JMF’s ACPM Medical College, Dhule.

Correspondence Email: om.pathologylab@gmail.com

Received: 15/03/2013 Revised: 08/04/2013 Accepted: 19/04/2013

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”. 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.

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.

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.

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**

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.

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).

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

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

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

![Fig. No.1. Age wise distribution of cases.](image1)

![Fig. No.2. Parity wise distribution of cases.](image2)
Clinical Complaints Of Patients

- Leucorrhoea
- Low backache
- Pain in abdomen
- Irregular P/V bleeding
- Itching at vulva
- Something coming out of vagina

Fig. No.3. Clinical complaints of patients.

Gross Findings On P/S Examination

- No gross pathology
- Hypertrophied, un healthy cervix
- Cervical erosion
- Hard nodular cervix
- Visible growth on cervix

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

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

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

Table No.3: Comparison of Results of Various Studies

<table>
<thead>
<tr>
<th>Author</th>
<th>NILM %</th>
<th>ASCUS %</th>
<th>LSIL %</th>
<th>HSIL %</th>
<th>SCC %</th>
<th>AGUS &amp; ADC</th>
<th>Unsatisfactory %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ghazal-Aswad et al,2006 [11]</td>
<td>95</td>
<td>2.9</td>
<td>1.1</td>
<td>0.9</td>
<td>0.0</td>
<td>0.0</td>
<td>-</td>
</tr>
<tr>
<td>Layla et al, 2007[13]</td>
<td>95</td>
<td>1.84</td>
<td>1.0</td>
<td>0.55</td>
<td>0.37</td>
<td>0.44</td>
<td>2.8</td>
</tr>
<tr>
<td>Mulay et al, 2009 [14]</td>
<td>98.08</td>
<td>0.64</td>
<td>0.21</td>
<td>0.16</td>
<td>0.06</td>
<td>-</td>
<td>0.73</td>
</tr>
<tr>
<td>Bahala et al,2011 [15]</td>
<td>90.71</td>
<td>5.61</td>
<td>0.16</td>
<td>1.28</td>
<td>0.64</td>
<td>0.48</td>
<td>3.28</td>
</tr>
<tr>
<td>Bal et al 2012 [16]</td>
<td>66</td>
<td>0.3</td>
<td>2.7</td>
<td>0.3</td>
<td>1.0</td>
<td>0.3</td>
<td>4.1</td>
</tr>
<tr>
<td>Nikumbh et al,2012 [17]</td>
<td>94.20</td>
<td>0.96</td>
<td>0.96</td>
<td>1.98</td>
<td>1.60</td>
<td>0.40</td>
<td>-</td>
</tr>
<tr>
<td>Bukhari et al,2012 [18]</td>
<td>88</td>
<td>1.0</td>
<td>4.6</td>
<td>2.2</td>
<td>1.4</td>
<td>0.4 &amp;0.6</td>
<td>1.8</td>
</tr>
<tr>
<td>Atilgan et al,2012 [19]</td>
<td>95</td>
<td>1.9</td>
<td>0.5</td>
<td>0.1</td>
<td>0.0</td>
<td>0.2</td>
<td>2.1</td>
</tr>
<tr>
<td>Present study</td>
<td>91</td>
<td>2.12</td>
<td>2.12</td>
<td>1.81</td>
<td>0.9</td>
<td>0.0</td>
<td>2.12</td>
</tr>
</tbody>
</table>

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. [13]. 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 was 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


******************************************************************************