EUROPEAN JOURNAL OF BIOMEDICAL AND PHARMACEUTICAL SCIENCES
http://www.ejbps.com

ISSN 2349-8870
Volume: 3
Issue: 10
401-405
Year: 2016

CORRELATION OF PAP SMEAR AND COLPOSCOPY IN RELATION TO BIOPSY FINDINGS IN DETECTION OF PREMALIGNANT LESIONS OF CERVIX IN A TERTIARY CARE CENTRE

Dr. Deepti Shrivastava*, Dr. Virul Shrivastava[1], Dr. Zansher Nazar[2] and Dr. Anjali P. Shrote[3]

*Professor & Head of Department of Obstetrics & Gynaecology AVBRH, DMIMSU, Sawangi(M), Wardha.
[1]Post Graduate of Obstetrics & Gynaecology.
[2]MBBS Graduate.
[3]MBBS Graduate.

***Corresponding Author: Dr. Deepti Shrivastava**
Professor & Head of Department of Obstetrics & Gynaecology AVBRH, DMIMSU, Sawangi(M), Wardha.

Article Received on 15/08/2016 **Article Revised on 05/09/2016** **Article Accepted on 25/09/2016**

ABSTRACT
Cervical malignancy is a common, preventable and curable cause of morbidity and mortality in our developing nation. Pap smear is the most common used screening test for cervical lesions worldwide. Colposcopy guided biopsy has been defined to be the gold standard method in diagnosing precancerous lesions of the cervix & used in evaluation and management of cervical lesions. **Objective:** Correlation of papanicolaou (PAP) smear and colposcopy in the detection of premalignant lesions of cervix. **Materials and Methods:** A prospective observational study was conducted in a tertiary care referral institute in 200 symptomatic women of 30-70 years. PAP smears were performed by the conventional method and colposcopy was done for all 200 women who came with complaints of white discharge per vagina, intermenstrual, or postcoital bleeding, etc. Final correlation of the PAP smear and colposcopy were based on biopsy reports. **Results:** 58.06% of the subjects who showed positive pap smear and 78.43% who showed positive colposcopy findings also gave positive biopsy findings. It can be deduced that colposcopy is more sensitive(58.06%) while Pap smear is more specific in accurate diagnosis of CIN. Diagnostic accuracy of colposcopy guided biopsy is 35.36%. **Conclusion**: It is evident that colposcopy is definitely more sensitive and accurate than pap smear. By combining pap smear with colposcopy, we can maximize the sensitivity and specificity of cancer cervix screening.

KEYWORDS: precancerous lesions, malignancy, colposcopy, gold standard, pap smears, biopsy, screening.

INTRODUCTION

With the paradigm shift in the life styles and demographic profiles, non-communicable diseases are growing as an emergent public health problem which needs immediate attention before it assumes an epidemic status, cervical cancer being one of them as the most common gynaecological cancers in developing countries.

Cervical cancer has an uneven geographic distribution, with the vast majority of cases being confined to regions where the awareness and the resources to combat the disease are the most meagre. There is a Worldwide incidence of 510,000 new cases annually, and 228,000 deaths worldwide., most of which are confined to developing countries.[1]

Cervical malignancy is also the commonest malignancy amongst Indian women. India accounts for one fifth of the world burden of cervical cancer with an estimated 1, 26,000 new cases and 71,000 deaths annually due to the disease. The cumulated life time risk of cervical cancer is 2.5% and a cumulative death risk of 1.4%.[2] In Indian women, Cervical malignancy accounts for 26.1- 43.8% of all cancers.

Cervical cancer is preceded by a long phase of premalignant cytological changes, known as cervical intraepithelial neoplasia (CIN) which takes a period of 15-20 years for the invasive cancer to develop. The pathological changes in CIN are microscopically a spectrum of events progressing from cellular atypia to various grades of dysplasia before leading to invasive carcinoma. Thus, cervical cancer can be prevented, if, cellular changes are detected and treated in early stage.[3]

In developed countries, the incidence of cervical cancer has decreased, due to screening, early detection and early treatment of pre cancerous lesions.

The reasons for higher prevalence of cervical cancer in developing countries are lack of resources, lack of awareness, lack of effective screening programs and poorly organized health system aimed for detecting pre cancerous condition before they progress to invasive cancer. In developing countries, cervical cancers are mostly incurable at the time of detection due to the advanced stage.

Thereby, the need for a cost effective, mass approach for effective cervical cancer screening programs is eminent. Several screening modalities are now available for early detection of cervical cancer and its precursors which differ in regard to their test characteristic, feasibility and economic considerations.[4]

Conventional cervical cytology or Papanicoleoau (Pap smear) is the most widely used cervical cancer screening test in the world. Cytology screening programmes in several developed countries have been associated with impressive reduction in cervical cancer burden.

Papanicolaou (Pap) smear is a simple, safe, non-invasive and effective method for detection of pre-cancerous and changes in the cervix and vagina.[5]

Cancer cervix is still the single largest cause of morbidity and mortality in developing countries. This is due to almost nonexistent and ineffective cytology based screening tests. Though cytology (Pap smear) is reliable, the laboratory infrastructure, counselling, follow-up and logistic including technical expertise may not be available in low resource setting.[6]

Colposcopy is a worldwide accepted method for detection of early cervical neoplasia. The cervical epithelium is directly evaluated through the colposcope, with the main goal to detect abnormal epithelium, to identify the area of epithelium with the highest degree of disease and to direct biopsies to that area or areas as needed.[7] Common problems encountered in colposcopy are infrastructure, inadequate expertise, interpretation difficulties, disagreements and failure to follow standard diagnostic protocol.

Against the above background, the above study was taken up to find out the possible correlation between abnormal pap smear and colposcopic findings.

MATERIALS AND METHODS

Study Population

Women between the age group 30-70 years, who attended the gynecology OPD, at Acharya Vinobha Bhave Rural Hospital, Sawangi (Wardha) were taken in the study.

Inclusion Criteria

Women in 30-70 years age group who attended the gynecology department for routine check up.

Exclusion Criteria

1. Women with age lessthan 30 years and more than 70years.
2. Unmarried
3. Pregnant women.
4. Active vaginal bleeding
5. Women with frank growth of cervix
6. post hysterectomy patient
7. Sexually inactive women
8. Women who have already undergone treatment for cervical lesions

METHODOLOGY

- Sample size -200
- Study design –Cross Sectional Study
- Study period- One year
- Informed consent was included for women who fulfilled the inclusion criteria and enrolled in the study.
- Ethical committee approval- After getting the ethical approval, our study was started.
- A careful history including demographic data like age, socioeconomic status, education, parity, age at marriage of the patient was taken. Information was noted on proforma.
- Prepared PAP smear slides were received fixed in 95% ethyl alcohol and ether. All women were subjected to colposcopy and cervical biopsy. Biopsy specimens were received in 10% formalin fixative. The prepared PAP smear slides were then stained according to the conventional PAP technique and examined under a light microscope. The cytological interpretation of the smears was made according to the Bethesda system 2014.
- Colposcopy directed biopsies were processed, histopathological slides prepared and stained with hematoxylin and eosin and examined under a light microscope. Biopsy results were categorized as chronic cervicitis, cervical intraepithelial neoplasia (CIN I), CIN II, CIN III, carcinoma in situ, squamous cell carcinoma(SCC) and adenocarcinoma according to WHO. Statistical analysis analysis was carried out by calculating sensitivity, specificity and positive and negative predictive value (NPV) of PAP smear, colposcopy and histopathological examination.

RESULTS

Table 1. Distribution of Patients According to Age

AGE DISTRIBUTION	NO. OF PATIENTS n = 200	PERCENTAGE (%)
30 – 40 YEARS	43	21.5
41 – 50 YEARS	74	37
51 – 60 YEARS	57	28.5
61 – 70 YEARS	26	13

Table 2. Distribution of patients by Parity

PARITY	NO. OF PATIENTS n = 200	PERCENTAGE (%)
PRIMIPARA	38	19
2 -4	133	66.5
>4	29	14.5
TOTAL	200	100

Table 3. Distribution of Patients According to Type of Residence

TYPE OF RESIDENCE	NO. OF PATIENTS n = 200	PERCENTAGE
RURAL	186	93
URBAN	14	7
TOTAL	200	100

Table 4. Distribution of cases according to Education

LEVEL OF EDUCATION	NO. OF PATIENTS n = 200	PERCENTAGE (%)
ILLITERATE	4	2
PRIMARY	108	54
HIGH SCHOOL	67	33.5
COLLEGE	21	10.5

Table 5: Distribution of the cases according to Active married life:

ACTIVE MARRIED LIFE (IN YEARS)	NO. OF PATIENTS n = 200	PERCENTAGE (%)
<5	17	8.5
5 TO 9	8	4
10 TO 14	62	31
15 TO 19	21	10.5
20 TO 24	53	26.5
>24	39	19.5
TOTAL	200	100

Table 6: Distribution of the cases according to age at 1st Coitus:

AGE AT 1ST COITUS (IN YEARS)	NO. OF PATIENTS n = 200	PERCENTAGE (%)
<=20	2	1
>20	198	99
TOTAL	200	100

Table 7. Evaluation of Pap smear and colposcopy in reference to Biopsy

	Pap smear positive	Colposcopy positive	Total
Biopsy positive	18	40	58
Biopsy negative	13	11	24
Total	31	51	82

- ꭓ2-value=3.86,p-value=0.049,S,p<0.05
- Sensitivity=58.06%(39.08-75.45%)
- Specificity=21.57%(11.29-35.32%)
- Positive Predictive Value=31.03%(19.54-44.54%)
- Negative Predictive Value=45.83%(25.55-67.18%)
- Diagnostic Accuracy=35.36%

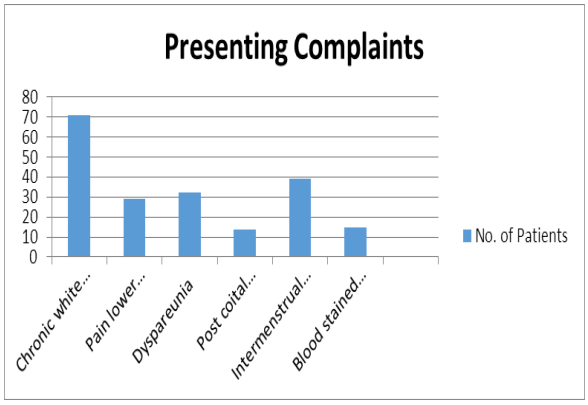

Fig 1. Distribution of Patients According to Presenting Complaints

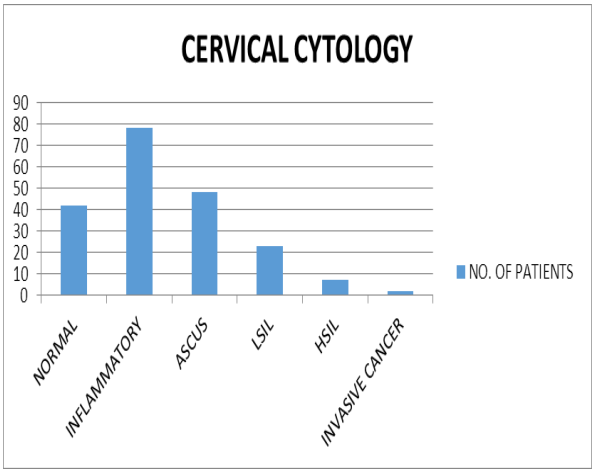

Fig 2. Distribution of Patients According to Results of Cervical Cytology

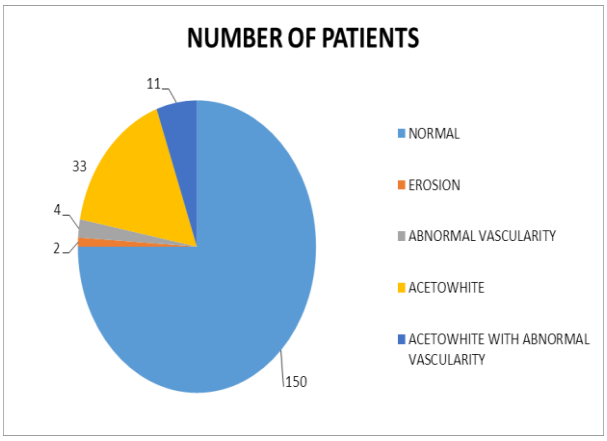

Fig 3. Colposcopic findings

DISCUSSION

In the present study, the maximum number of cases were reported in the age group of 41-50 years (37%), similar findings have been reported in other studies. Pradhan B et al showed in their study that CIN was more prevalent in age group of 41 to 50 years.[8] Anuja et al, in their study showed that the prevalence of CIN was higher in women over 30 years.[9]

In the present study, we observed an increased incidence of CIN amongst multiparous women. 66.5% were para 2 to 4, 14.5% were para 5 and above. This finding was similar to the study conducted by Zainab et al in which 81.24% of the subjects showing increased incidence of CIN were multiparous, with parity between 2 to 4 with decreasing incidence in parity more than 5 (9.37%).[10]

The low literacy rate attributes to the lack of awareness of symptoms. Low socioeconomic status could lead to relatively more unhygienic conditions of the cervix, thus playing an epidemiological role in genesis of dysplasia. Both literacy and socioeconomic status may attribute to the lack of awareness of symptoms and failure to seek medical attention.

In the study by Ashmita et al, 94.2% of women were literate and multiparous, 48.1% of women were belonging to the lower class and 26.9% of women were willing to undergo the tests due to awareness and fear of cancer.[11]

Zainab et al. reported the incidence of CIN was 40.62% among 10 to 20 years duration of marriage.[10]

The severity of underlying CIN increased with increase in the duration of marital life and hence also the increase in the duration of sexual intercourse. In our study, the incidence of CIN was 31% in amongst those married for 10-14 years.

Kushtagi et al had demonstrated that the severity of underlying CIN increased with an increase in the duration of marital life and hence with the increase in the duration of sexual intercourse.[12]

Among the complaints, majority of women complained of excessive white discharge per vagina in our study similar to other studies. 30-71% women complained of excessive vaginal discharge in various similar studies and it was also proved to play a role in contributing to the development of CIN.[9][10][11][13][14]

Post coital bleeding was found in 9.61% of cases. Among these women who had post coital bleeding, 70% had benign findings, rest had cell carcinoma and CIN 2. A study by Ramesh G et al found 3.75% of cases having post-menopausal bleeding and 6.25% cases with post coital bleeding.

We found intermenstrual bleeding in 23.07% of cases, while Ramesh G et al observed 16.25% of cases with intermenstrual bleeding.[15]

In the present study, 16% pap smears showed positive findings as in comparison to 25% colposcopic positive findings. Seckin et al found that 29.1% patients had normal colposcopy and 71% of benign lesions had normal colposcopy.[16] In a study by Wills et al, 2.5%

had normal colposcopy in women with inflammatory smear.

The most common colposcopy finding was acetowhite area (33%) in our study. This finding was similar to Chandrakala et al (43%).[14]

Pap smear reporting is subject to many disadvantages of specimen collection techniques, fixation, staining process and the experience of the cytopathologist. As in Ashmita et al, if Pap smear was only the modality used, both the cases of preinvasive lesions of cervix would be missed.[11] Similar observations have been discussed in other studies also.[17][18]

In Ashmita et al, though Pap smear and colposcopy correlated with histopathology individually, they failed to correlate with each other when statistically analysed.[11] The obvious advantage by adding both methods is masked by the small number studied.

Table 7 shows that 58.06% of the subjects who showed positive pap smear and 78.43% who showed positive colposcopy findings also gave positive biopsy findings. It can be deduced that colposcopy is more sensitive while pap smear is more specific in accurate diagnosis of CIN.

CONCLUSION

Colposcopy is an investigation well suited to note the site of lesion for biopsy and histopathological diagnosis, while pap smear is important in differentiating pre malignant and malignant lesions. Hence, It may be established that a combination of both tests should be performed instead of Pap smear alone in accurate diagnosis of CIN for better patient compliance and follow up.

REFERENCES

1. Sankaranarayan R, Farley J. Worldwide burden of Gynaecological cancer: the Size of the Problem. Best Pract Res Clin Obstet Gynaecol. 2006; 20: 207-225.
2. WHO/ICO Information centre on HPV and Cervical Cancer statistics in India. 2007.
3. Franco EL, Duarte Franco E, Ferenczy A. Cervical cancer: Epidemiology, Prevention and role of Human Papillomavirus infection. Cmaj, 2001; 164(7): 1017-1025.
4. Behtash N, Mehrdad N. Cervical Cancer: Screening and Prevention. Asian Pac J Cancer Prev. 2006 Oct-Dec; 7(4): 683-686.
5. Thomas J Elmslie. The Pap smear and Cervical Cancer screening, Can fam Physician. 1987 Jan; 33: 131-137.
6. O'meara AT. Present Standards for Cervical Cancer Screening. Curr Opin Oncol. 2002 Sept; 14(5): 505-511.
7. Debbie Saslow et al. American Cancer Society, American Society for Colposcopy and Cervical Pathology and American Society for Clinical Pathology Screening Guidelines for the Prevention and Early Detection of Cervical cancer. J low Genit Tract Dis. 2012 Jul; 16(3): 175-204.
8. Pradhan B, Pradha SB, Mittal SP. Correlation of Pap Smear findings with clinical findings and cervical biopsy. Kathmandu Univ Med J. 2007; 20: 461-467.
9. Anuja B et al. Correlation of Pap Smear, Colposcopy and Histopathology in Women with unhealthy cervix. Journal of South Asian Federation of Obstetrics and Gynaecology. 2012 May-Aug; 4(2): 97-98.
10. Zainab SN, Pravin C. Comparison and Correlation of Pap smear with Colposcopy and Histopathology in evaluation of Cervix. Journal of Evolution of Medical and Dental Sciences. 2015; 53(4): 9236-9247.
11. Ashmita D, Shakuntala PN. Comparison and Correlation of Pap smear, Colposcopy and Histopathology in Symptomatic women and Suspicious looking Cervix in a tertiary hospital care centre. Int J of Health Sciences and Research. 2013 May; 5(3).
12. Kushtagi P, Fernandez P. Significance of Persistant Inflammatory, Cervical smears in sexually active women of reproductive age. The Journal of Obs and Gyn of India. 2002 Jan-Feb; 52(1): 124-126.
13. Chaudhary MA et al. Essentials of Cervical Cancer. World Journal of Pharmacy and Pharmaceutical Sciences. 2014; 3(2): 1110-1123.
14. Joshi C, Kujur P, Thakur N. Correlation of Pap Smear and Colposcopy in relation to Histopathological findings in detection of premalignant lesions of Cervix in a tertiary care centre. International Journal of Scientific Study. 2015 Nov; 3(8): 55-60.
15. Ramesh G et al. Colposcopic Evaluation of the Unhealthy Cervix. Journal of Clinical and Diagnostic Research. 2012 August; 6(6): 1026-1028.
16. Seckin NC, Turban O, Ozmen S, Ersan F et al. Routine Evaluation of patients with persistant inflammatory epithelial changes. Acta Cytol. 1990; 34: 1335.
17. Bhavana Sherigar, Anita Dalal, Geeta Durdi, Yeshita Pujar, Hema Dhumale. Cervical cancer screening by Visual Inspection with Acetic Acid-Interobserver Variability between Nurse and Physician. Asian Pacific Journal of Cancer Prevention. 2010; 11: 619-622.
18. Mallur PR, Desai BR, Anita D, Geeta D, Bhavana S, Pallav G. Sequential Screening with Cytology and Colposcopy in Detection of Cervical Neoplasia. J South Asian Feder Obst Gynae. 2009; 1(3): 45-48.