Global Journal of Medical research: E
Gynecology and Obstetrics
Volume 14 Issue 4 Version 1.0 Year 2014
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

Correlation of Pap Smear with Histopathological Findings in Malignant and non Malignant Lesions of Cervix

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Abstract- *Background:* Conventional cervical cytology is the most widely used cervical cancer screening test in the world. Squamous intraepithelial neoplasia (SIL) and cervical cancer remain important health problems for women worldwide.

Aim and Objective: To study various types of cervical lesions with relevant factors such as age, parity, to classify cervical lesions into malignant & benign groups and to correlate the cytological with histopathological findings.

Materials and Methods: This study was conducted on 200 cases of Pap smears and cervical biopsies, along with resected specimens. After fixation and staining, smears and cervical biopsies were processed and examined under microscope.

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GJMR-E Classification : *NLMC Code: WP 475*

Strictly as per the compliance and regulations of:

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Results: Age wise maximum number of patients were in fourth decade (54.50%), followed by fifth decade. On cytology, 59% were inflammatory smears and frank malignancy was reported in 10% cases. LSIL and HSIL were reported in 9% and 8.50% respectively. Maximum number of cases on biopsy was those of infections (57.50%), 27% cases were those of frank malignancy; most common being invasive squamous cell carcinoma (23%) and adenocarcinoma in 2%. Mean age among cancer cases was high (51.94±12.30 years) compared to those who did not have cervical cancer (39.53±9.66 years). Cervical cancer was seen in 39.65% of patients with having ≥3 children. 10% cases diagnosed on cytology turned out to be malignant on biopsy.

Conclusion: Pap smear followed by cervical biopsy is an effective method for detection of pre-cancerous, cancerous and non-cancerous changes in the cervix.

Keywords: malignant, cervical cancer, pap smear, cervical biopsy.

I. Introduction

Papanicolaou (Pap) smear is a simple, safe, non-invasive and effective method for detection of pre-cancerous, cancerous and non-cancerous changes in the cervix.[1] Conventional cervical cytology is the most widely used cervical cancer screening test in the world and cytology screening programmes in several developed countries have been associated with impressive reduction in cervical cancer burden.[2] Squamous intraepithelial lesions are viewed as precancerous lesions exhibiting many of the morphological characteristics of invasive carcinomas. Identification of these entities is the focus of cervical screening programs that aim to discover them and commence their treatment in order to prevent invasive disease.[3] Though data from the 20 populations based cancer registries in India indicate a steady decline in cervical cancer incidence rates over the last two decades, it still occupies second position and the risk of disease is still high.[3] Cervical carcinoma documents the remarkable effects of screening, early diagnosis, and curative therapy on the mortality rate. Death rate has declined for which the credit goes to Pap test and accessibility of cervix to colposcopy and biopsy. Though, the Pap smear is an effective screening test, yet confirmation of the diagnosis of cervical cancer or pre invasive lesions of cancer requires a biopsy of the cervix.

II. Aims and Objectives

The aims of this study were to study the changes in cervical cytology with relation to age, parity and other presenting features, to classify cervical lesions into malignant and benign groups on cytological and histopathological basis and to correlate the changes observed in cervical cytology with cervical biopsy.

III. Materials and Methods

This study was done on 200 cases of Pap smears and cervical biopsies (including hysterectomy specimens). Most of the patients with symptoms suggestive of cervical disease were selected. However, some having gynaecological symptoms other than cervical disease were also included. Few cases reporting for routine screening were also included. A detailed clinical history especially age, duration of symptoms, parity, menstrual pattern and vaginal discharge were noted. The patients in whom both Pap smear and biopsy was available, were included in the study. The fixed cervical smears were subjected to staining according to Papanicolaou's method. The cytological interpretation of the smears was made according to the New 2001 Bethesda system. After grossing and processing, cervical biopsies were subjected to histopathological examination.

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IV. Results

Age wise maximum number of patients were in fourth decade (54.50%), followed by fifth decade (Table-1). Duration of symptoms varied from few months to many years. Some patients presented within 1 year (79%), but few mainly cases with discharge and history of prolapse presented late (Table-2). In 200 cases, various symptoms were seen, some patients showed multiple symptoms. Majority of patients (58%) presented with vaginal discharge followed by irregular bleeding (47%). Menstrual changes were also seen in large number of patients. There was seen low usage of oral contraceptive pills in our study group (10.50%). Duration of OCP usage varied from few months to years, but long term usage was not seen in any case. On cytology, 59% were inflammatory smears and frank malignancy was reported in 10% cases, LSIL and HSIL was reported in 9% and 8.50% respectively (Table-3). Maximum number of cases on biopsy were those of infections (57.50%), among them majority had non-specific chronic cervicitis. Squamous intraepithelial lesions were seen in 25 patients. Mild dysplasias correspond to low grade squamous intraepithelial lesions, moderate and severe to high grade intraepithelial lesions. 54 cases (27%) were those of frank malignancy on biopsy (Table-4); most common diagnosis being invasive squamous cell carcinoma (23%) and adenocarcinoma in 4 cases (2%). Distribution of age was correlated with cancer cases. Most of the cancer cases were seen in the age group of 31- 45 years. The mean age among cancer cases was high (51.94±12.30 years) and (39.53±9.66 years) in cases who did not have cervical cancer (Table-6). Cervical cancer was seen in 39.65% of patients with ≥3 children. History of oral contraceptive use was present in 21(10.50%) women. Of which 14.29% had cervical cancer and 85.71 % did not have cervical cancer, showing poor correlation between oral contraceptive use and cervical cancer (p= 0.165). 20 cases diagnosed on cytology turned out to be malignant on biopsy showing strong correlation between cytology and histopathology (p<0.001). Some of the cases were obscured by blood and inflammation which were missed on cytology but proved to be malignant on biopsy.

Table 1 : showing age distribution of cervical lesions

Age group (Years)	Distribution (n=200)	
	No.	%age
18-30	29	14.50
31-45	109	54.50
46-60	41	20.50
> 60	21	10.50
Total	**200**	**100**

Table 2 : showing duration of symptoms

Duration (Years)	Distribution (n=200)	
	No.	%age
Up to 1	158	79.00
1-3	25	12.50
4-6	11	05.50
>6	06	03.00
Total	**200**	**100**

Table 3 : showing cytological diagnosis

Diagnosis	Distribution (n=200)	
	No.	%age
Unsatisfactory smear	08	4.00
Inflammatory	118	59.00
ASCUS/H	19	9.50
LSIL	18	9.00
HSIL	17	8.50
Frank malignancy	20	10.00
Total	**200**	**100**

Table 4 : showing histopathological diagnosis

Diagnosis	Distribution (n=200)	
	No.	%age
Infections	115	57.50
Carcinoma	54	27.00
Dysplasia	25	12.50
Benign tumors	06	03.00
Total	**200**	**100**

Table 5 : Showing correlation of cytological and histopathological Diagnosis

Histopathological Diagnosis	No.	Cytological Diagnosis					
		Unsatisfactory	Inflammatory	ASCUS/H	LSIL	HSIL	Ca
Infections	115	-	108	07	-	-	-
Carcinoma	54	08	-	-	12	14	20
Dysplasia	25	-	04	12	06	03	-
Benign tumors	06	-	06	-	-	-	-
Total	**200**	**08**	**118**	**19**	**18**	**17**	**20**

Table 6 : showing means age

Variable	Cervical Ca (n=54)		No Ca (n=146)	
	Mean	SD	Mean	SD
Mean	51.94	12.30	39.53	09.66
T	7.469			
Df	198			
P	< 0.001			
Significance	Highly Significant			

V. Discussion

Cancer cervix is considered to be an ideal gynaecological malignancy for screening as it meets both test and disease criteria for screening. It has a long latent phase during which it can be detected as identifiable and treatable premalignant lesions which precede the invasive disease and the benefit of conducting screening for carcinoma cervix exceeds the cost involved. [4]

Despite the success of cervical cancer screening programs, questions remain about the appropriate time to begin and end screening. This review explores epidemiologic and contextual data on cervical cancer screening to inform decisions about when screening should begin and end. The incidence and mortality rates from, cervical cancer that have had a Pap smear within 3 years have decreased since 2000.

In this study, more than half (54.50%) were aged between 31 to 45 years followed by 20.50% between 46 to 60 years. The mean age of patients with cancer in the present study was 51.94 years. This is close to that found by Biswas et al[5] and Missaoui et al.[6] Although, invasive cancer cervix is reported at all ages; it has two peaks, one at about 35 years and another above 50 years. The highest age of cervical cancer in the present study was 73 years and the lowest was 26 years. The mean age for non-cancer cases was 39.53 years. In this study, the most common symptoms was discharge per vaginum (58%) followed by irregular bleeding in 47% of the patients. Patients with cancer also presented with post-coital bleeding and in cases of older age group post menopausal bleeding was seen. Symptomatic presentation was similar to some extent as seen by Ikram et al [7].

In this study, 59% patients had the cytological diagnosis of benign/ inflammatory and carcinoma was present in 10% of the cases. This is comparable to Saha and Thapa[8] in which benign cases were 51.16% and carcinoma was diagnosed in 6.97% of the cases. Most common cancer in the present study was squamous cell carcinoma (85.18%). This study showed results similar to those seen by Ikram et al[7] (83.33%).

As regards the various histopathological varieties of SCC, the present study found an incidence of 67.39% for moderately differentiated SCC, 23.91% for well differentiated, 8.70% for poorly differentiated. Thus, the findings of the present study are consistent with that

of Missaoui et al [6] in that moderately differentiated large cell non-keratinizing variety is the commonest variety.

VI. Conclusions

It is concluded that most commonly seen problem, infection, can be controlled with good hygiene. Cervical carcinoma is seen in large number of patients. Pap is a relatively less invasive and a simple procedure to diagnose cervical lesions in developing countries. But sometimes, there can be obscuring of the cellular details by blood, especially in malignant cases. In such cases, biopsy is helpful and confirmatory.

VII. Acknowledgments

We thank the patients and technical staff of Pathology Department GMC Patiala for processing the Pap smears and cervical biopsies.

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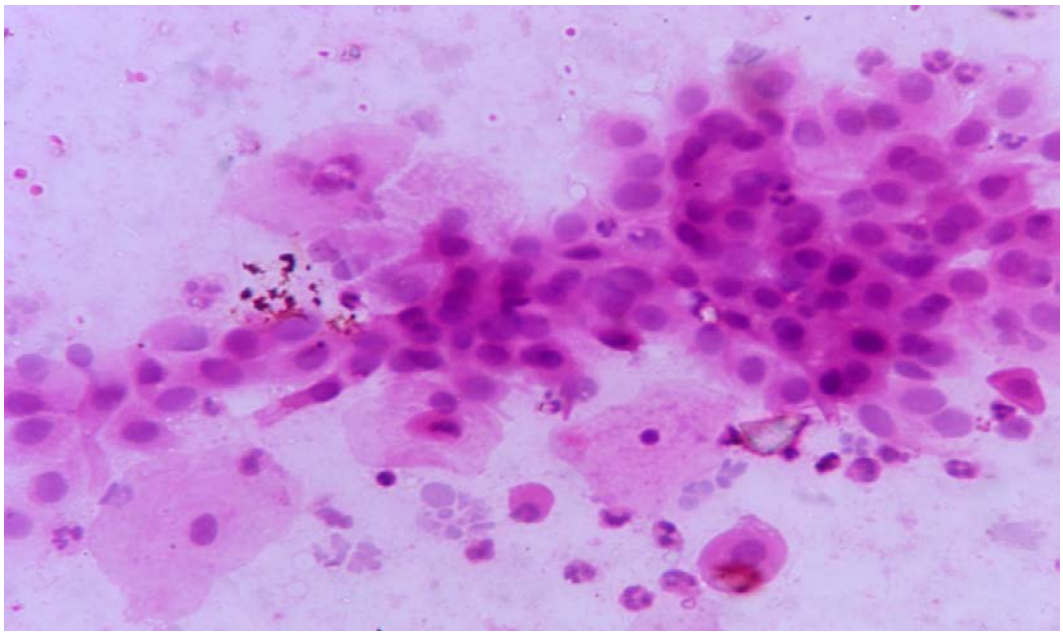

Figure 1 : Photomicrograph of HSIL showing group of hyperchromatic parabasal cells exhibiting nucleomegaly and overlapping nuclei (PAP X 400)

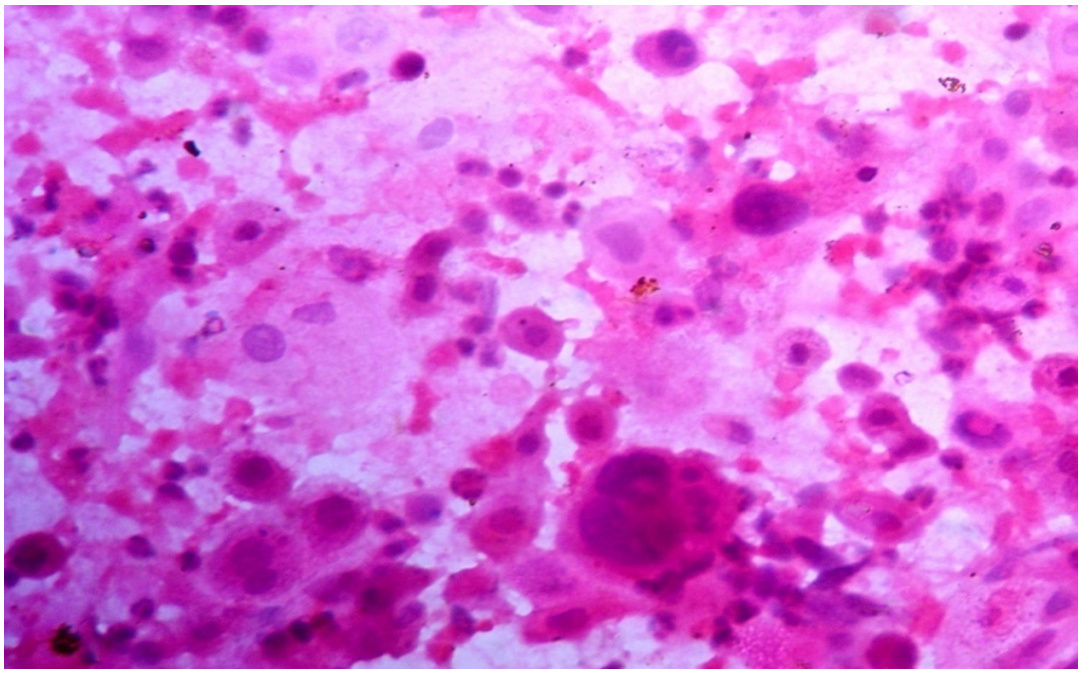

Figure 2 : Photomicrograph of **Squamous cell carcinoma** showing tumour diathesis, malignant cells with nucleomegaly, hyperchromatism and irregular nuclear margins (PAP X 400)

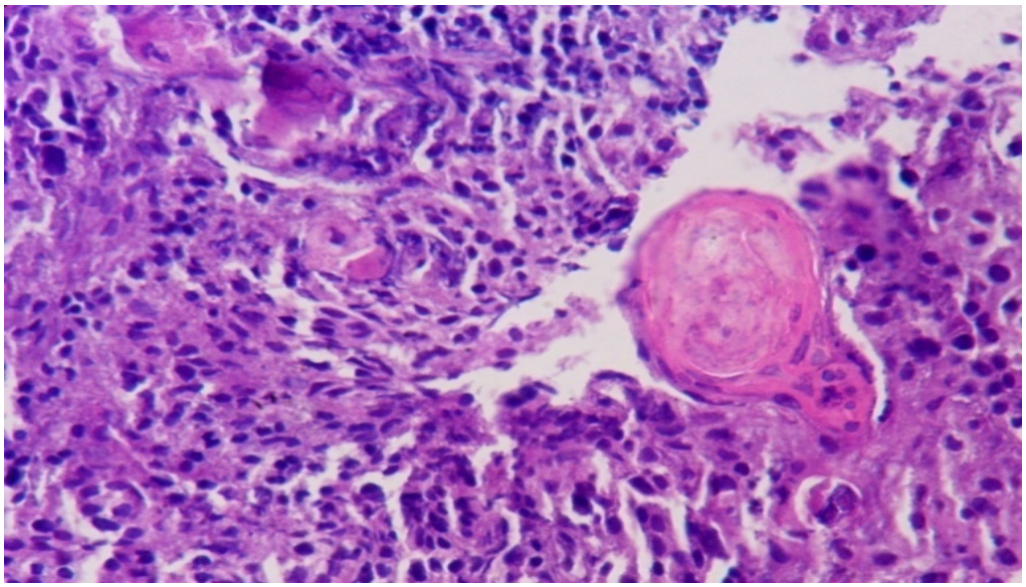

Figure 3 : Photomicrograph of **Well differentiated SCC** (H & E X 400)

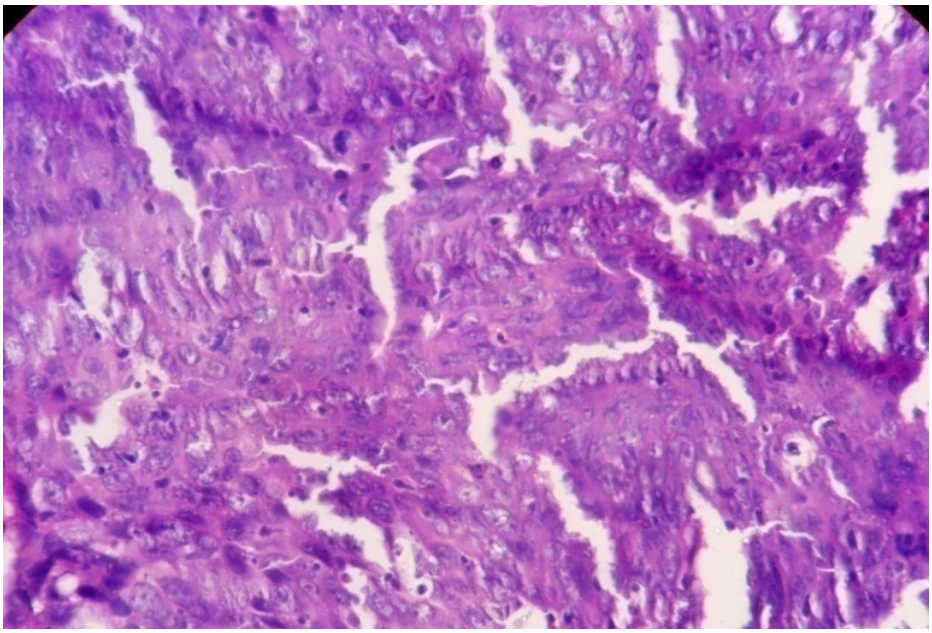

Figure 4 : Photomicrograph of **moderately differentiated SCC** (H & E X 400)