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Research Article

Analysis of abnormal cervical cytology in Papanicolaou smears at tertiary care center – A retrospective study

Bhavika K. Vaghela[*1], Vikas K. Vaghela[2] and Pravina M. Santwani[3]

[1]*Assistant Professor, Pathology Department, P.D.U. Medical College, Rajkot, Gujarat, India.*
[2]*B. J. Medical College, Ahmedabad, Gujarat, India.*
[3]*Head & Professor of Pathology Department, M. P. Shah Medical College, Jamnagar - 361008*

*** Correspondence Info:**
Dr. Bhavika K. Vaghela,
Assistant Professor,
Pathology Department,
P.D.U. Medical College, Rajkot, Gujarat, India.
E-mail: drbkv1@gmail.com

Abstract

Objective: Cervical cancer is the second most common cancer in women worldwide after breast cancer, and in developing countries, the leading cause of death by cancer. It is one of the most preventable and curable of all cancers. Most women are never undergoing a cervical Pap smear screening. The Objective is to study the role of Pap smear in detecting premalignant and malignant lesions as well as non-neoplastic lesions of cervix and to determine the prevalence of various lesions.

Methods: This retrospective study of 500 women with age group 18 to 90 years was carried out over a 2 years at cytology section of pathology department, M.P.Shah medical college, Jamnagar. This study had been divided into 2 groups. Group I included study of 400 women who attended gynaecological clinic at GGH hospital Jamnagar and Group II included study of 100 women who attended Pap smear screening camp at Air force hospital, Jamnagar. Pap smears were prepared and after fixation and staining, each smear was carefully examined.

Results: In this study, Low-grade squamous intraepithelial lesions was the most common with 62 cases (12.4%) followed by High-grade squamous intraepithelial lesions with 25 cases (5%), then atypical squamous epithelial cells of undetermined significance 14 cases (2.8%), Squamous cell carcinoma 12 cases (2.4%), AGCUS 6 cases (1.2%), AGCUS probably neoplastic origin 1 case (0.2%) and other rare tumors- 1(0.2%) case of granulosa cell tumor and 1 case(0.2%) of clear cell carcinoma were seen. The average age of women for all the epithelial abnormalities was 49 years.

Conclusion: Pap smear is a simple, cheap, safe and practical diagnostic tool for early detection of cervical cancer in high risk group population, so it should be established as a routine screening procedure. It also has a greater role in diagnosis of inflammatory lesions including the identification of causative organism, atrophic changes, changes of radiation therapy and some rare tumors. It is recommended that at least a single life-time pap screening cytology of uterine cervix of all the women aged 40 to 50 years.

Key words: Pap smear, Cervical cancer, The Bethesda System

1. Introduction

The Papanicolaou (Pap) smear was introduced in 1941 and became the standard screening test for cervical cancer and premalignant lesions[1]. Cervical cancer is the second most common cancer in women worldwide after breast cancer, and in developing countries, the leading cause of death by cancer. Cervical cancers in the early stage of development, or carcinomas in situ, are highly treatable because the cancer cells are located in a layer of cells in or around the cervix and have not spread to other parts of the body. Once the cancer cells metastasize to other parts of the body the disease is more difficult to treat and cervical cancer treatment becomes more complex[2].

Though pap test plays a stellar role in detection of carcinoma and precancer, its role in diagnosis of infective inflammatory conditions including the identification of causative organism, hormone related benign epithelial changes and changes due to therapeutic agents is no less successful[3].

Originally, the term Pap smear was used for smears made out of posterior fornix material for purpose of detection of cancer and pre-cancer lesions. But presently, the term is used for smear made from material collected from vagina, endocervical canal, ectocervix or vaginal vault[3].

The randomized examination of cervical PAP smears in women with vaginal discharge showed that cervical infections, intraepithelial neoplasia of various grade and invasive cervical carcinoma are much more common in Georgia as compared to the Western countries. The possible reason for this fact is the absence of cervical screening program, low social-economic status, and lack of awareness of cervical cancer prevention by PAP smears[4].

The simplicity, effectiveness and versatility of Pap test have made it an integral part of routine clinical examination and large chunk of workload in gynecological and pathological practice is due to this test[5].

2. Materials and Methods

In present study results of PAP smears obtained from 500 women were analyzed, which had been examined in cytology section (Department of Pathology, M.P. Shah Medical College, Jamnagar) during 2 years from 2008 to 2009. The mean age of the women was from 18 to 90 years.

The study was conducted on 500 pap smears prepared from women of two groups. In group I, 400 women were included who attended gynecological clinic, Guru Gobind Singh Hospital, Jamnagar with various complaints like vaginal discharge, prolapsed uterus, pain in lower abdomen, vaginal bleeding etc. In group II, a study included Pap smear screening camp at Air force hospital, Jamnagar in which total 100 women participated.

It was ensured that no local douche, antiseptic cream and no local internal examination was done on day of test. The patient was placed in dorsal lithotomy position and a Cusco's bivalve speculum was introduced through vagina and cervix was visualized. The longer projection of the Ayre's spatula was placed in the cervix near squamo-columnar junction and rotated through 360 degree. The cellular material thus obtained was quickly, but gently smeared on a clean glass slide. The glass slide was then immediately put into the coplin jar containing 100% methanol (fixative), stained by Pap method (RAPID-PAP kit).

The cytological interpretation of smears was made according to the New Bethesda System 2001.

3. Results

A total of 500 cases were analyzed during above mentioned period. The age of the women ranged from 20 to 81 years with an average age of 36.7 years. Most of women were in age group of 30-39 years (Table1).

Table 1: Age-wise distribution of total number of patients

Age- group(years)	Number of cases	Percentage %
20-29	67	13.4
30-39	167	33.4
40-49	140	28.0
50-59	60	12.0
60 or more	66	13.2
Total	**500**	**100**

Twenty four (4.8%) smears were found to be unsatisfactory for evaluation. One hundred and nineteen (23.8%) were normal. The negative for intraepithelial lesion category has the following findings: nonspecific inflammation 187 cases (37.4%), Trichomonas infection 10 cases (2%), Candidiasis 14 cases (2.8%), Bacterial vaginosis 8 cases (1.6%), Herpes simplex virus infection 2 cases (0.4%), Actinomycosis 1 case (0.2%), Atrophic changes 12 cases (2.4%) and Reactive cellular changes 1 case(0.2%).

Premalignant and malignant lesions had mentioned in Table 2 and their age-wise distributions were mentioned in Table 3. The average age of women for all the epithelial abnormalities was 49 years.

Table 2: Finding of Pap smear cytology

Sr no.	Diagnosis	Number of cases	Percentage (%)
1	Unsatisfactory for evaluation	24	4.8
2	Normal	119	23.8
3	Negative for intraepithelial lesion	235	47.0
4	ASCUS	14	2.8
5	LSIL	62	12.4
6	HSIL	25	5.0
7	Squamous cell carcinoma	12	2.4
8	AGCUS	6	1.2
9	AGCUS probably neoplastic origin	1	0.2
10	Adenocarcinoma	0	00
11	Others: Granulosa cell tumor	1	0.2
	Clear cell carcinoma	1	0.2
	Total	**500**	**100**

Table 3: Age-wise, Finding of Pap smears cytology

Age- group (years)	Number of cases	ASCUS	LSIL	HSIL	Squamous cell carcinoma	AGCUS	AGCUS probably neoplastic origin	Adeno-carcinoma	Others	Total No. of Abnormal finding	Percentage (%)
20-29	67	4	5	0	0	3	0	0	1	13	2.6
30-39	167	6	14	3	2	1	1	0	0	27	5.4
40-49	140	4	22	7	1	2	0	0	0	36	7.2
50-59	60	0	10	5	2	0	0	0	1	18	3.6
60 or more	66	0	11	10	7	0	0	0	0	28	5.6
Total	**500**	**14 (2.8%)**	**62 (12.4%)**	**25 (5%)**	**12 (2.4%)**	**6 (1.2%)**	**1 (0.2%)**	**0 (0%)**	**2 (0.4%)**	**122**	**24.4**

4. Discussion

The incidence of cervical cancer has decreased more than 50% in the past 30 years because of wide spread screening with cervical cytology. In 1975, the rate was 14.8 per 100,000 women in the United States and by 2006; it had been reduced to 6.5 per 100,000 women. Mortality from the disease has undergone a similar decrease[7, 8, and 19].

The result of present study and their correlation with other workers are discussed below in following paragraphs:

Table 4: Comparison of findings of Pap smear cytology with other studies

Name of workers	No. of cases	Inadequate (%)	Normal (%)	Atrophic changes (%)	Inflammatory Lesions (%)	SIL (%)	Invasive carcinoma (%)
Judoo and Ranade (1979)[10]	1200	-	20.84	-	65	13.33	0.83
Yajima *et al* (1982)[11]	959475	-	-	-	-	-	0.10
Beinton *et al* (1986)[12]	130	-	20	-	59.23	11.15	2.69
Mital *et al* (1989)[13]	250	-	40.65	-	12.70	40.65	6.00
Chauhan *et al* (1990)[14]	5778	-	9.76	-	69.19	2.28	-
Spinilla *et al* (1997)[15]	1483 (postmenopausal)	-	17.39	72.96	9.64	-	-
Tabrizi *et al* (1999)[16]	460(p)	8.30	54.16	-	23.30	12.58	1.66
Thomas *et al* (2000)[17]	85(p)	5.88	58.82	-	-	20	-
Karuma *et al* (2003)[6]	100(p)	-	-	31	-	12	-
Mishra & Panday (2003)[18]	764(p)	-	-	-	-	11.3	-
Sherwani *et al* (2007)[9]	160	-	85	-	-	11.2	3.7
Present study	400	13.25	1.50	3	53	21	3

Above table shows that higher incidence of inadequate smears in present study, lower incidence of diagnosed as normal smears as received smears were usually suggestive of abnormal cervical pathology. Incidence of atrophic changes was lower in present study compare to other study which included only postmenopausal group. Incidence of inflammatory lesions, SIL and invasive carcinoma was comparative to others studies [9, 12, 17].

Table 5: Comparison of findings of Pap smear cytology with other studies

Name of workers	No. of cases	ASCUS %	LSIL %	HSIL %	Squamous cell carcinoma %	AGCUS %
Beinton *et al* (1986)[12]	130	6.93	8.46	2.69	2.69	-
Karuma *et al* (2003)[6]	100(p)	6	7	5	-	3
Sherwani *et al* (2007)[9]	160	-	10.6	0.6	3.7	-
Present study	400	02.75	15.00	06.00	03.00	01.50

Incidence of HSIL, squamous cell carcinoma was comparative to other study.

A study done in Nepal has shown that 80% of all abnormal epithelial lesions were found in age-group above 40 years as about 80% of the patients were above the age of 30 years [20]. The American Cancer control program and IARC have suggested similar or slightly modified screening programs[21].

5. Conclusion

Cervical cancer is one of the most common malignancies in women of developing country like India. Pap smear is a simple, cheap, safe and practical diagnostic tool for early detection of cervical cancer in high risk group population, so it should be established as a routine screening procedure. It also has a greater role in diagnosis of inflammatory lesions including the identification of causative organism, atrophic changes, changes of radiation therapy and some rare tumors. It is recommended that at least a single life-time pap screening cytology of uterine cervix of all the women aged 40 to 50 years.

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