A Study on Cervical Cancer Screening Using Pap Smear Test and Clinical Correlation

Dr. Kiran Choudhary[1], Dr. Rekha Jakhar[2]

[1]PG Resident, Department of Obstetrics & Gynecology, Umaid Hospital, Dr. S.N. Medical College, Jodhpur, Rajasthan, India

[2]Senior Professor & Unit Head, Department of Obstetrics & Gynecology, Umaid Hospital, Dr. S.N. Medical College, Jodhpur, Rajasthan

Abstract*: Background: carcinoma cervix is the leading cause of mortality and morbidity in developing country like India, most probably due to lack of proper screening facilities or due to lack of awareness among the women of developing country. In INDIA cervical cancer is most common genital cancer in women .Worldwide, cervical cancer is the second most common and 5th deadliest cancer in women. Objective: The aim of this study to evaluate the role of pap smear in detecting premalignant and malignant lesions as well as nonneoplastic lesion of cervix and to study the different epithilial abnormalities of cervix. Place & Duration of Study: The study was conducted over a period of 6-months in the Department of Obstetrics and Gynaecology of Umaid Hospital, Dr. S.N. Medical College, Jodhpur. Methods: Study was conducted on 500 females who were not pregnant who had been attending OPD for various gynecological complaints, of different parity and more than 21 years of age. Detailed history was taken and thorough examination was done. Pap smear was prepared and all smear were reported as per the Bethesda system. Result: Commonest presenting complaints was white discharge (46.8%). Maximum no of patient were in the age group of 21-45 years of age and multiparous .On pap smear, Maximum cases were of inflammatory smear (89.2%) 2.2% had ASCUS, 2 % LSIL, 1.4% HSIL, 0.4% had SCC. Most of the women in our study had age at marriage between 17 to 19 yrs (49.4%). Conclusion: Pap smear is simple, noninvasive, cost effective and important tool for early detection of premalignant and malignant lesion of cervix .Regular pap smear screening should be conducted in vulnerable age group. Women with an abnormal pap test should undergo a colposcopy and those with abnormal colposcopy finding should be advised to undergo a biopsy.*

1. Introduction

- Cervical cancer is an important health problem and leading cause of morbidity and mortality amongst women globally. Worldwide, it is the second most common and 5th deadliest cancer in women but in India, Cervical cancer is the most common genital cancer encountered in clinical practice1.

- Every year in India , 1,22,844 women are diagnosed with cervical cancer and 67,477 die from the disease.2 The 5 year survival rate of cervical cancer when detected at the earliest stage is 92%.

- It is a preventable disease which if detected early can reduce the morbidity and mortality associated with cervical cancer. About 80- 85 % of cases are detected in stage 3/4.3,4A regular screening programme is capable of reducing the incidence of invasive cervical cancer.

- Since early detection predicts better prognosis, one of the most effective ways of preventing and controlling cervical cancer is regular screening and early diagnosis.Cytology is most effective and practical method for cervical cancer screening, as it is simple, relatively inexpensive, reliable , less time consuming and generally applicable .

- Hence a method which is simple and inexpensive is more likely to be successful as a screening procedure. It is important to define the high risk population for the screening of cervical neoplasia, dysplasia and other inflammatory lesion.

Objective
The aim of this study to evaluate the role of pap smear in detecting premalignant and malignant lesion as well as nonneoplasticlesion of cervix and to study the different epithelial abnormalities of cervix .

2. Materials and Method of Study

- This is an observational study carried out in the department of Obstetrics and Gynecology, Umaid hospital, attached to Dr. S. N. Medical College, Jodhpur.

- The study included 500 women attending Gynae OPD of Umaid Hospital, Jodhpur from January 2019 to June 2019, who consented to participate in the study.

Inclusion Criteria
1) Married women between 21 to 65 years

Exclusion Criteria
1) Women not willing to participate in the study
2) Known cases and treated cases of cancer cervix
3) Women who were pregnant
4) Women who used local douche or antiseptic cream

Detailed history was taken and thorough examination was done .Pap smear were prepared and all smears were reported as per Bethesda system.[5]

- Pap smears were obtained from squamocolumnarjunction with the help of Ayre's spatula. The material obtained was quickly smeared on a clean glass slide and the smear was immediately fixed in 95% ethyl alcohol. In laboratory the slides were stained with papanicolaou stain and examined under light microscope. The cytological interpretation of the smears was made according to The Bethesda System.

- The test was invented by and named for the prominent Greek doctor George Papanicolaou. The test aims to detect potentially precancerous changes, called cervical intraepithelial neoplasia (CIN) or cervical dysplasia, squamous intraepithelial lesion system (SIL) is also used to describe abnormalities,whichare caused by HPV, a sexually transmitted DNA virus .The test remains an

effective , widely used method for early detection of precancer and cervical cancer. While the test may also detect infections and abnormalities in the cervix.

3. Results and Observation

Most of the women who participated had undergone this test for the first time and were not aware of the test.

Demographic distribution is summarized in Table 1.

Table 1: Sociodemographic Distribution

		Number(n)	Percentage
Age group	21-30	91	18.2
	31-40	280	56
	41-65	129	25.8
Parity	Nullipara	15	3
	Primipara	68	13.6
	Multipara	417	83.4
Marital status	Yes	500	100
	No	0	0
Residential staus	Rural	262	52.4
	Urban	238	47.6
Education	Illiterate	270	54
	10th pass	80	16
	12th pass	117	23.4
	Graduate and above	33	6.6
Contraception use	None	170	34
	Barrier	163	32.6
	OCP	20	4
	IUCD	35	7
	Tubal ligation	102	20.4
	Others	10	2

Majority of women included in the study were in the age group of 31 – 40 years i.e. 56%. Out of 500 women 417 (83.4%) were multiparous and only 3% were nulliparous. All the women were married and gave history of monogamous relationship. Majority of womenwere Illiterate (54%) and only 6.6% were graduate and above. 170 (34%) women did not use any form of family planning methods.

Table 2: Clinical Presentations

Presenting complaints	Number	Percentage
Discharge p/v	234	46.8
Irregular menses	35	7
Post coital bleeding	13	2.6
Pain in lower abdomen	177	35.4
Itching vulvae	140	28
Urinary complaints (burning micturation)	59	11.8
Post menopausal bleeding	9	1.8

Prior to taking test women were asked about presence of any symptoms. As depicted in the Table 2, Most common presenting complaint was discharge P/V (46.8%) followed by pain in lower abdomen (35.4 %) and itching vulva (28%) and least common complaints were irregular menses (7%) , postcoital bleeding (2.6%) and postmenopausal bleeding (1.8%).

Table 3: Speculum findings

Speculum examination	Number	Percentage
Healthy cervix	280	56
Cervical erosion	162	32.4
Chronic cervicitis	130	26
Discharge	253	50.6
Bleeding on touch	45	9

On speculum examination (Table 3) most common finding was healthy looking cervix (56%) followed by discharge (50.6). 32.4% women had cervical erosion, 26% had chronic cervicitis and 9% bled on touch.

Table 4: Pap Smear Cytology

Pap smear cytology	Number	Percentage
NILM (Negative for intraepithelial lesion)	462	92.4
Non specific inflammatory smears	446	89.2
Bacterial vaginosis	16	3.2
ASCUS	11	2.2
AGC	8	1.6
LSIL	10	2
HSIL	7	1.4
SCC	2	0.4

On pap smear cytology, most common finding was NILM(92.4%), the incidence of dysplasia in our study is 7.2% (36 cases) and the incidence of malignancy is 0.4%(2 cases)

4. Discussion

A regular screening programme is capable of early detection of cervical cancer in a community at the stage of dysplasia and thus reducing the morbidity and mortality. Cytology is most effective and practical method for cervical cancer screening, as it is simple, relatively inexpensive, reliable, less time consuming and easily applicable.

In our present study, evaluation of cervical smear in women above 21 years of age attending Umaid Hospital, Jodhpur with various gynaecological complaints wasdone, in order to study the various high risk factors involved in the premalignant and malignant lesions of the cervix and patients were evaluated on the basis of their age, maritalstatus, duration of marriage, age at marriage, parity, residential status, education, contraception use and presenting complaint. A cervical smear was prepared from all these 500 cases and the slides were studied and interpreted by pathologist.

Most of the women were in the age group of 31 to 40 years i.e. 56% and 41 to 65 years i.e. 25.8%. Similar results are found in studies conducted by Rajput et al, Vaghela et al, Bamanikar et al, Umarani et al, Bhavani K et al [6-10].This age group is most vulnerable for manifestations of cervical pathology as cervical lesions are slowly growing and takes 10-12 years to manifest after cervical insult.

In our observation, 52.4% cases were from rural population and 47.6% of cases from urban population. The incidence of cervical cancer was found to be the highest in the females belonging to rural areas. Our findings are consistent with the studies conducted by Rajput et al, Roopali et al, Maibam et al [6,11,12]. Since over 70% of the Indian population resides in

the rural areas, so the incidence is higher in rural population. There is high incidence of cervical cancer among rural females due to lack of personal hygiene, low nutritional status, low literacy rate, repeated births and lack of access to health services in rural setup. All these are the risk factors for cervical dysplasias and hence cervical cancer.

In our study all womenwere married. Duration of marriage and duration of exposure to sexual intercourse had a distinct role in genesis of cervical dysplasia. Majority of women (74.2%) had duration of married life of >10 years. Similar findings have been published by other studies conducted by Khalaf MK et al (70.5%), Zainab et al (51.92%), Tapasvi I et al (92.3%).[15-17] Early marriages, leads to longer sexual life and being sexually active for longer duration elevates the number of pregnancies, abortions, deliveries and increases the chances of sexually transmitted infection. HPV is a very common sexually transmitted infection worldwide and its infection has been found in almost all cases of invasive cervical cancer. The time from infection to the development of invasive cancer is thought to be many years; typically between 10 and 40.

Maximum number of patients had age at marriage between 17-19 years i.e. 49.4%, and between 20-24 years in 40.6% cases. The present findings were in accordance with the observations made by Rajput et al, Roopali et al, Kaur et al, Khalaf et al, Bhalero et al, Gupta K et al.[6,11,13,15,18,19] Marriage at younger age then leads to longer sexual life which proves to be a significant risk factor in cervical dysplasia and also increases susceptibility of adolescent cervix to oncogenic irritation. The adolescent cervix is vulnerable to various potential oncogenic factors (HPV) when exposed and results in increase incidence of dysplasia and its further course.

Majority of patients were multipara (83.4%), which was comparable to other studies by Rajput et al, Verma et al, Zainab et al, Bhalero et al, Schiff et al.[6,14,16,18,20] High parity has been associated with cervical neoplasia even after adjustment for sexual activity and other risk factors. Possible mechanisms that have been hypothesized include hormonal effects on cervical epithelium, prolonged immunosuppressant during multiple pregnancies. Pregnancy may produce some dysplastic lesions of the cervix which regress, persist or progress to carcinoma. Trauma to the cervix is one of the possible explanations that warrant explorations include increased susceptibility to infection through immunosuppressant, hormonal influence and dietary deficiencies.

Commonest presenting complaint was white discharge per vagina found in 46.8% patients which is comparable to the studies conducted by Rajput et al (73.5%), Bamanikar et al (51.8%), Bhalero et al (71%), Papa dasari et al (44.7%), Ashok Verma et al (54.5).[6,8,18,21,22] .

Present study shows the pap smear findings of women. In our study, 92.4% were having negative for intraepithelial lesion or malignancy on pap smear, which corresponds to the following studies conducted by Vaghela et al (70.75%), Bamanikar et al (88.93%), Umarani et al (82.08%), Bhavani K et al (90.77%).[7-10]

2.2 % ASCUS, which corresponds to the studies conducted by Vaghela et al (2.8%), Bamanikar et al (2.32%), Umarani et al (5.34%), Bhavani K et al (2.33%), Verma A et al (1%).[7-10,22] A higher incidence of ASCUS was found in study by Umarani et al (5.34%) due to the more number of cases and long duration of studies.

1.6% AGC, which corresponds to the studies by Vaghela et al (1.4%) and Umarani et al (0.64%).[7,9]

2% of cases had LSIL, which is comparable to the studies Bamanikar et al (1.96%) and Umarani et al (1.62%).[8,9]

1.4 % had HSIL, which is comparable to studies by Umarani et al (0.64%) and Bhavani K et al (1.8%).[9,10]

0.4% had SCC, which corresponds to the results by Bamanikar et al (0.53%), Umarani et al (0.28%), Bhavani K et al (0.12%).[8-10]

5. Conclusion

- For over five decades, the national standard for cervical cancer screening has been the papanicolaou test, which is largely responsible for the dramatic 90% decrease in mortality and 70% decrease in cervical cancer. Cytology has been the mainstay for cervical cancer screening for decades and has led to a substantial reduction in cervical cancer incidence in countries with screening programs. The cytological method of diagnosis is convenient, valuable, technically sound and feasible method for detection of unsuspected carcinoma of genital tract and precancerous lesion at the time when they are not evident clinically. Pap smear test combined with human papillomavirus – DNA testing can help increase the sensitivity of detection of cervical pathology.

- Various epidemiological factors play an important role in pathogenesis of disease. So favourable modification can play an important role in decreasing morbidity and mortality associated with disease. So it is important to identify and screen the high risk population and social reforms motivate the optimal education of women for development of a positive attitude towards cancer consciousness and to make screening programme successful.

6. Conflict of Interest

No

7. Funding

No

References

[1] Malur PR , Desai BR , Dalal A , Dundi G , Sherigan B , Gupta P .A study on sequential screening with cytology and colposcopy in detection of cervical Neoplasia . South Asian Federation of Obstet Gynaecol.2009; 1(3):45-8.

[2] ICO information centre on HPV AND cancer .Human papillomavirus and related diseases in India. Summary Report. 2014: 2014.

[3] Anderson SG, Linton EB .The diagnostic accuracy of cervical biopsy and cervical conisation. Am J Obstet Gynaecol.1967; 99:113.

[4] Camsor and Gall. Dysplasia and early neoplasia of uterine cervix: a review .ObstetGynaec Survey .1974; 34:1.

[5] Rosa M Cervix – Cytology Bethesda System 2001. for cervicovaginal cytology Reporting 2010.

[6] Rajput N, VermaYS, AhirwarG. Detection of abnormalcervicalcytologyby pap'ssmearand comparison between rural and urban women. J EvolutMedDentSci.2013;2(41):4923-30.

[7] Vaghela BK, Vaghela VK, Santwani PM. Analysis of abnormal cervical cytology in papanicolaou smear at tertiary care centre: Aretrospective study. IntJ BiomedAdvRes.2014;5(1);47-49.

[8] BamanikarSA, BaravkarDS, Chandanwale SS, DapkekarP. Study of cervical pap smears in a tertiary Hospital. Indian Medical Gazette.2014; 250-254.

[9] Umarani MK, Gayathri MN, Madhu Kumar R. Study of cervicalcytology inpapanicolaousmearsina tertiary care hospital. Indian J PatholOncol.2016;3(4):679-83.

[10] BhavaniK, Sheela PV, VaniI, Jyothsna Y, Uma N. Study of cervicalcytology in papanicolaousmears in a tertiary care center.IAIM. 2017; 4(11):172-6.

[11] Roopali.Sociodemographic risk factors for cervical cancer in Jammu and Kashmir state of India first ever report from Jammu. Indian J SciRes.2014;9(1):105-10.

[12] Maibam AD, Singh KI. International Scholarly and Scientific Research Innovation.2017; 11(8):2076-9.

[13] KaurT, GargS, MorS. Sociodemographic and reproductive risk factors in cervical cancer. Int J Reprod Contracept Obstet Gynecol. 2016May; 5(5):1510-3.

[14] KhushbooV.Clinical assessment and correlation of pap smear and liquid based cytology in bad cervix. J EvolutMedDentSci.2014; 53(16):12277-87.

[15] Khalaf MK, Rasheed FA, Hussain SAR. Association between early marriage and other sociomedical characterstics with the cervical pap smear results in Iraqi Women. Adv Sexual Med. 2015; 5:73-82.

[16] NayaniZS, HendrePC. Comparison and correlation of pap smear with colposcopy and histopathology in evaluation of cervix. J Evol Med Dent Sci.2015; 4(53):9236-47.

[17] Tapasvi I, Tapasvi C, Aggarwal A. To correlate the effect of parity, age of marriage, religion, socioeconomic status and contraception practiced in the development of premalignant and malignant lesions of cervix. IntJ Res Health Sci.2015; 3(1):174-8.

[18] BhaleroA. Correlative study of pap smear, colposcopy and histopathology. J South Asian Federat Obstet Gynaecol. 2012; 4(2):97-8.

[19] GuptaK. Prevalence of cervical dysplasiain western Uttar Pradesh. Department of Pathology, Lala LajpatRai Memorial Medical College, Meerut, Uttar Pradesh, India. J Cytol.2013; 30(4):257-62.

[20] SchiffM, MillerJ, Masuk M. Contraceptive and reproductive risk factors for cervical intraepithelial neoplasiain American Indian Women, Medicine and health. Int JEpidemiol.2000:29(6):983-90.

[21] DasariP, RajathiS, Kumar SV. Colposcopic evaluation of cervix with persistent inflammatory papsmear:aprospective analytical study. CytoJ.2010; 7: 16.

[22] VermaA, VermaS, VashistS, AttriS, Singhal A.A study on cervical cancer screening in symptomatic women. Middle East FertiSoc J.2017; 22(1):39-42.