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Original Research Article

Cytopathological pattern of cervical Papanicolaou smear in women of reproductive age group

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ABSTRACT

Background: Cervical is the most prevalent genital cancer the second most frequent gynaecological cancer and the second highest rate of cancer related death among Indian women. Cervical cancer is preventable because it has a prolonged preinvasive stage effective cervical screening programs exist and preinvasive lesions that can be treated.
Methods: The prospective observational study has been carried out on all women attending the (OBGY) OPD in GSVM medical college and hospital. 1000 women were selected for the study. Appropriate history was taken and the women were advised to undergo Papanicolaou (PAP) smear and were followed for reports and were further treated accordingly.
Results: As the number of risk factors increased the higher the degree of lesions were observed in cervix. After being counselled for screening, 100% women agreed for PAP smear in which 71.5% of the women had normal results, 10.5% were diagnosed with cervicitis, 9.3% had vaginitis, 3.2% had an inadequate smear, 2.1% also had an inadequate smear, 1.3% had bacterial vaginosis, 1.0% had ASCUS, 0.8% had HSIL, and 0.3% showed reactive cellular changes. Following a cervical biopsy, 14.9% of the women in need of additional testing had a normal biopsy, and 24.3% had chronic cervicitis. Invasive carcinomas affected 16.2% CIN1, 2.7% CIN2, 1.4% CIN3, and 1.4% of CIN1. 10.8% of the individuals could not be reached for follow-up.
Conclusions: In our study we found that after counselling 100% women agreed for PAP smear and hence this shows that counselling is very important to create awareness regarding prevention of cancer. Multiple risk factors are associated with cervical cancer and awareness regarding it is necessary in general population to reduce the risk of cervical cancer.

Keywords: Carcinoma cervix, PAP smear, Cervical biopsy

INTRODUCTION

Around the world, cervical cancer is the fourth most frequent gynecological cancer.[1] It is the most prevalent genital cancer, the second most frequent gynecological cancer, and the second-highest rate of cancer-related death among Indian women.[2]

Human papillomavirus (HPV), people belonging to low socioeconomic status, smokers, marriage before eighteen years, early onset of sexual activity, multiple sexual partners, multiparity and associated infections like sexually transmitted diseases, HIV are known risk factors for cervical cancer.

Cervical cancer is extremely preventable and highly treatable if identified early. Nearly all instances of cervical cancer can be avoided through HPV vaccination, routine screening for cervical cancer, and prompt follow-up care when needed.[3]

A safe and effective way for primary prevention of cervical cancer is HPV vaccination.[4] Three vaccines that are available are Cervari, Gardasil 4 and Gardasil 9. Gardasil-

9 is the FDA-approved vaccine that can be given to both females and males aged 9 to 45.[5] Cervarix is protective against HPV 16 and18, while Gardasil-4 is protective against HPV 6, 11, 16 and 18 while Gardasil 9 is approved to prevention against HPV types 6, 11,16, 18, 31, 33, 45, 52, and 58. Two prevalent screening methods are the HPV test and the PAP test (PAP smear). The HPV test detects cells infected with high-risk HPV strains that can lead to cervical cancer. The PAP test is utilized to examine cervical cells for alterations induced by HPV that, if not addressed, could develop into cervical cancer. It helps identify both precancerous and cancerous cells in the cervix. Additionally, a PAP test can reveal non-cancerous issues, such as infections or inflammation.[6]

Awareness about cervical cancer and the significance of early screening and prevention methods is key in reducing its occurrence.[7] Lack of knowledge, negative perceptions and insufficient adherence to screening contribute significantly to the disease's prevalence. Therefore, the present study was conducted to assess the awareness and compliance of cervical cancer screening and HPV vaccination among women of reproductive age group.

METHODS

After getting approval of ethical committee of our university the prospective observational study has been carried out on all women attending the (OBGY) OPD in GSVM medical college and hospital from September 2022 to July 2024.

Study duration

Study carried out for 1 year

Sample size

Total 1000 participants were involved in study.

Inclusion criteria

All the women attending the OPD (Outpatient department), women who gave consent and willing to follow were included.

Exclusion criteria

Those who are suffering from any type of cancer and not giving consent to participate in the study were excluded.

Data collection procedure

After gathering all the information, patients were advised to undergo a PAP smear. The procedure was conducted with the patient lying in the dorsal position using an Ayre's spatula. All slides were swiftly forwarded to the pathology department at GSVM medical college. The PAP smear results were evaluated based on the 2001 Bethesda classification system and were classified into categories such as normal, inflammation, atypical squamous cells of undetermined significance (ASCUS), low-grade or high-grade squamous intraepithelial lesions, HPV related changes, or invasive cervical cancer.

Group I: Normal smears (NILM), group II: ASCUS, group III: LSIL, group IV: HSIL and group V: Squamous cell carcinoma.

Abnormal PAP smears were subjected to colposcopy and biopsy. All patients with abnormal cervical cytology were followed up.

Statistical analysis

The collected data were analyzed for correlations and significance using appropriate statistical techniques with SPSS software.

RESULTS

Five (0.6%) of the participants had multiple sexual partner while 804 (99.4%) of the participants had single sexual Partner. The 11 (1.4%) of the participants were smokers while 798 (98.6%) were nonsmokers. The 115 (14.2%) of the participants had early onset of sexual activity between 16 to 18 years. The 225 (27.8%) of the participants had multiple childbirths with parity ≥3.

The 71.5% (715) of the participants had a normal PAP smear report (NILM) negative for intraepithelial lesion or malignancy), 10.5% (105) participants had cervicitis, 9.3% (93) participants had vaginitis, 3.2% (32) participants had LSIL, 2.1% (21) participants had inadequate smear, 1.3% (13) participants had bacterial vaginosis, 1.0% (10) participants had ASCUS. 0.8% (8) participants had HSIL, 0.3% (3) participants reactive cellular changes.

Among these 1000 participants, there were138 antenatal participants among which 79% (109) had normal report, 13% (18) had cervicitis, 5.8% (8) had vaginitis, 1.4% had LSIL and 0.7% (1) had ASCUS.

The 74 participants were followed for abnormal PAP smear report: In 28.4% (21) of the participants with inadequate smear were subjected to repeat PAP smear the repeat PAP smear report came out to be normal NILM. In 24.3% (18) chronic cervicitis. 16.2% (12) of the participants had histopathological report as CIN1, 14.9% (11) were negative for malignancy, 2.7% (2) of the participants had histopathological report as CIN2, 1.4% (1) CIN3 and 1.4% (1) of the participants had histopathological report as invasive carcinoma. 10.8% (8) of the participants were lost to follow up.

We observe that 3 or more high risks were present in participants with higher grade of lesions such as LSIL and HSIL in their PAP smear report.

Table 1: Distribution of participants according to risk factors for cervical cancer.

Variables		N	Percentage (%)	95% CI
Smoking	Yes	11	1.1	0.6%-2.0%
	No	989	98.9	98.0%-99.4%
Age of onset of sexual activity (in years)	16-18	115	11.5	9.6%-13.7%
	19-21	324	32.4	29.5%-35.4%
	>21	561	56.1	53.0%-59.2%
Sexual partner	Single	995	99.5	98.8%-99.8%
	Multiple	5	0.5	0.2%-1.2%
Parity	P1	300	34.9	31.8%-38.2%
	P2	334	38.9	35.6%-42.2%
	P3	184	21.4	18.8%-24.3%
	P4	34	4.0	2.8%-5.5%
	P5	7	0.8	0.4%-1.7%

Table 2: Risk factors.

Risk factor	Present	Absent
Parity ≥3	225 (27.8%)	584 (72.2%)
Multiple sexual partner	5 (0.6%)	804 (99.4%)
Smoking	11 (1.4%)	798 (98.6%)
Early onset of sexual activity	115 (14.2%)	694 (85.8%)

Table 3: Distribution of participants according to PAP smear report, (n=1000).

Variables		N	Percentage (%)	95% CI
PAP smear report	NILM	715	71.5	70.1%-75.8%
	Reactive cellular changes	3	0.3	0.1%-1.0%
	ASCUS	10	1.0	0.5%-1.9%
	Cervicitis	105	10.5	8.9%-12.9%
	Vaginitis	93	9.3	7.8%-11.6%
	Bacterial Vaginosis	13	1.3%	0.7%-2.3%
	LSIL	32	3.2%	2.3%-4.6%
	HSIL	8	0.8%	0.4%-1.7%
	Inadequate Smear	21	2.1%	1.3%-3.2%

Table 4: Distribution of antenatal participants according to PAP smear report, (n=138).

Variables		N	Percentage (%)	95% CI
PAP smear report of antenatal cases	NILM	109	79.0	71.1%-85.3%
	ASCUS	1	0.7	0.0%-4.6%
	Cervicitis	18	13.0	8.1%-20.1%
	Vaginitis	8	5.8	2.7%-11.5%
	LSIL	2	1.4	0.3%-5.7%

Table 5: Distribution of patients according to histopathological report.

Histopathological report	N	Percentage (%)	95% CI
Normal repeat pap report	21	28.4	18.8%-40.2%
Chronic cervicitis	18	24.3	15.4%-35.9%
CIN1	12	16.2	9.0%-27.0%
Negative for malignancy	11	14.9	8.0%-25.5%
Lost to follow up	8	10.8	5.1%-20.7%
CIN2	2	2.7	0.5%-10.3%
CIN3	1	1.4	0.1%-8.3%
Invasive carcinoma	1	1.4	0.1%-8.3%

Table 6: Distribution of number of high risks presents in participants in various PAP smear reports.

PAP smear report	Number of high risks present in a participant					Total no. of participants
	0	1	2	3	4	
NILM	75.80% (542)	21.68% (155)	2.5% (18)	0	0	(715)
Bacterial vaginosis	46.15% (6)	30.77% (4)	23.08% (3)	0	0	(13)
Cervicitis	71.43% (75)	26.67% (28)	1.9% (2)	0	0	(105)
Vaginitis	75.27% (70)	22.58% (21)	2.15% (2)	0	0	(93)
LSIL	3.125% (1)	37.5% (12)	56.25% (18)	3.125% (1)	0	(32)
HSIL	0	12.5% (1)	25% (2)	37.5% (3)	25% (2)	(8)
ASCUS	10% (1)	30% (3)	60% (6)	0	0	(10)
Reactive cellular changes	66.67% (2)	33.33% (1)	0	0	0	(3)

DISCUSSION

In our study, the various risk factors were found. The 225 (27.8%) of the participants were multiparous (parity ≥3) and 5 (0.6%) of the participants had multiple sexual partners while 804 (99.4%) of the participants had single sexual partner, 11 (1.4%) of the participants were smokers while 798 (98.6%) were non-smokers, 115 (14.2%) of the participants had early onset of sexual activity between 16 to 18 years. In the research conducted by Raychaudhuri et al multiparity (37.2%), early marriage (82%), cloth usage (83.3%), condom use (5.4%), oral contraceptive pill use (15.8%) and early first sexual encounter age (65.6%) were prevalent risk factors.[8] The difference may be due to more sample size in our study as compared to their study.

In our study, 71.5% (715) of the participants had a normal PAP smear report NILM, 10.5% (105) participants had cervicitis, 9.3% (93) participants had vaginitis, 3.2% (32) participants had LSIL, 2.1% (21) participants had inadequate Smear, 1.3% (13) participants had bacterial Vaginosis, 1.0% (10) participants had ASCUS, 0.8% (8) participants had HSIL and 0.3% (3) participants had reactive cellular changes. In the research that Ahuja et al the PAP smear report for all 308 women reveals that 94% of them had good smears (NILM), 0.9 percent had abnormal smears (2 LSIL and 1 ASCUS) and 31.2% had inflammatory smears.[9] In the research that Agrawal et al the PAP smear report for all 240 women reveals that 216 had normal cytology (NILM).[10]

In our study, 74 participants were followed for abnormal PAP smear report. In 28.4% (21) of the participants with inadequate smear were subjected to repeat PAP smear and the repeat PAP smear report came out to be normal NILM. In 24.3% (18), histopathological report was chronic cervicitis. 16.2% (12) of the participants had histopathological report as CIN1, 14.9% (11) of the participants had histopathological report as negative for malignancy, 2.7% (2) of the participants had histopathological report as CIN2, 1.4% (1) had histopathological report as CIN3 and 1.4% (1) of the participants had histopathological report as invasive carcinoma. 10.8% (8) of the participants were lost to follow up. The research by Gupta et al investigated the relationship between colposcopy, cervical cytology, and histopathology in the diagnosis and management of cervical lesions.[11] All cervical biopsies showed some type of abnormality, with inflammation being the most prevalent. Chronic cervicitis was found in 72.72% of the cases, and parakeratosis was present in 5.45%. The difference in biopsy reports observed in their study and our study may be due to larger sample size in our study.

Limitations

Smaller sample size of the study, limited duration of study and restricted region of population under study.

CONCLUSION

In our study 100% participants were made aware by our counselling and they had undergone PAP smear testing and we were able to treat the lesions early. This shows that we can reach the goal of eradicating carcinoma cervix by creating general awareness. We also saw in our study that as the number of risk factors increased the higher the degree of lesions were observed in cervix. This also warrants the need to create awareness regarding high risk behaviour which should be avoided especially early age of onset of sexual activity, multiple sexual partners, sexually transmitted disease, multiparity and so proper family planning should be advised. Also antenatal women were also included in the study and therefore antenatal visits also provide a good opportunity for screening and creating awareness about carcinoma cervix and hence can help in reducing the burden of cervical carcinoma. All the society organizations and government should come together and make efforts in making policies for creating awareness among the masses so that the burden of carcinoma cervix is decreased and we can create a healthier population.

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