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RESEARCH ARTICLE

“EVALUATION OF PREVALENCE AND CHARACTERISTIC OF CERVICAL AND VAGINAL PAP SMEARS - A THREE YEAR STUDY AT TERTIARY CARE CENTRE OF WESTERN INDIA.”

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Abstract

Introduction: Cervical cancer is an increasing health problem and an important cause of mortality in women worldwide.

Aims & objective: The present study aimed to evaluate cervical and vaginal smears for cervical screening and to categorize the age and pattern of Pap smear abnormalities in a tertiary care hospital.

Methods: It is a prospective retrospective study that includes Pap smear results of 3871 women who visited the gynaecology department for routine health check-up or for screening any pathological abnormalities found between January 2017 and December 2019. All the Pap smear results were retrieved and analysed to evaluate abnormal cervical findings with age distribution, site of collection, and epithelial cell abnormalities.

Results: Out of 3871 smears, 3026 (78.17%) smears were collected from cervix and 845 (21.83%) smears were collected from vault. The mean age of women was 49.76 ± 12.57 years. 173 smears (4.46%) were found unsatisfactory or inadequate for evaluation. 2723 smears (70.36%) showed inflammation, 130 smears (3.35%) showed candida infection, 717 smears (18.52%) showed bacterial vaginosis, 20 smears (0.51%) showed trichomonas vaginalis and 20 smears (0.51%) were diagnosed with epithelial cell abnormalities.

Conclusion: It is concluded from the study that smear positivity of intraepithelial lesions has to be co-related with histopathology for further management. Early diagnosis of cervical cancer is possible with Pap smear test. The Pap smear is very useful, economical and simple tool in identifying the abnormalities even in asymptomatic women.

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Introduction:-

Cervical cancer is an increasing health problem and an important cause of mortality in women. The incidence of cervical cancer arises worldwide. The difference in incidence between developing and developed countries, where cervical cancer cases have been significantly reduced, is large. In India the incidence of cervical cancer is still high. According to the World cancer statistics, >80% of all cervical cancer cases are found in developing and low-

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resources countries, because of a lack of awareness and difficulty in running cytological screening programs.^[1] More than one-fifth of all cervical cancer deaths occur in India.^[2] Every year, 122,844 women in India are diagnosed with cervical cancer, and 67,477 women die from the disease.^[3]

Early detection and appropriate treatment of cervical cancer is possible if robust screening is implemented.^[4] Early cervical epithelial changes can be identified by a Pap smear test, which is the primary screening test for detection of precancerous cervical intraepithelial neoplasia and the early stage of invasive cervical cancer. Due to widespread screening programs, there has been a significant reduction in mortality from cervical cancer in developed countries. The objective of the cancer screening, therefore, is the detection of the precancerous lesion before developing into invasive cervical cancer. Hence, the present study aimed to evaluate cervical and vaginal smears for cervical screening and to categorize the age and pattern of Pap smear abnormalities in a tertiary care hospital.

Methods:-

This prospective retrospective descriptive study was carried out between January 2017 and December 2019 after the approval from Institutional Human Research Ethical Committee, Shree Krishna Hospital, Karamsad. This study includes a total of 3871 Pap smears collected from women visited the gynaecology outdoor of the tertiary care centre for routine health check-up or as a patient. Repeat smears from the same patient were excluded from the study. Anonymity and confidentiality of the participants was preserved by not revealing their names and identity in the data collection, analysis and reporting of the study findings.

All the Pap smears were conventional smears and were reported using "The Bethesda System of Reporting Cervical Cytology 2014". All the data were collected from laboratory information system and requisition forms from cytopathology laboratory.

The results were analysed for descriptive analysis using Microsoft Excel 2013 for different parameters of the study like age distribution, site of collection, clinical history, adequacy of smears, status of endocervical / transformation zone, epithelial cell abnormalities etc.

Results:-

Out of total 3871 smears collected, 3026 (78.17%) were collected from cervix and 845 (21.83%) were collected from vault. As shown in Table no.1, the maximum number of women screened was from the age group of 41 to 60 years, followed by age group of above 60 years. The mean age of the women screened in the present study was 49.76 ± 12.57 years (Range- 19-98 years). Among all the screened smears, 3698 (95.53%) smears were found satisfactory and 173 (4.46%) smears were unsatisfactory for microscopic evaluation. Among 2741 adequate cervical smears, 1104 smears showed presence of endocervical/ transformation zone component and 1137 smears were absent with same (Table no. 2).

In the present study as shown in table 3, 1345 (9.97%) cases showed NILM (Negative for Intraepithelial Lesion or Malignancy) without any abnormality in the smears whereas 2724 smears (70.36%) showed inflammation. Out of these 2723 smears, 1168 showed mild, 1016 showed moderate and 540 smears showed severe inflammation. Atrophic changes were reported in 1345 cases (34.74%) and candida infections were seen in 130 (3.35%) cases. Infection of actinomycetes was reported in 3 cases, whereas 717 (18.52%) cases showed bacterial vaginosis (shift of flora). 20 cases (0.51%) showed trichomonas vaginalis and only 8 cases (0.20%) were diagnosed for various squamous cell abnormalities. In the present study it was found that many individual cases showed multiple findings which represents overlapping of various diagnosis.

When mean age of groups of various cytological findings are compared, it was observed that the Trichomonas vaginalis was found in younger age with the mean age of 42.95 ± 8.87 years whereas the atrophic changes were found in older age with the mean age of 59.06 ± 9.12 years.

As shown in table 4, among the 20 cases that showed epithelial cell abnormality, 13 cases were diagnosed for ASC-US (Atypical squamous cells of undetermined significance), 02 cases were diagnosed for HSIL (High-grade squamous intraepithelial lesion), 01 case was diagnosed for LSIL (Low-grade squamous intraepithelial lesion) and ASC-H (Atypical squamous cells- cannot exclude HSIL) each and 03 cases were diagnosed with AGUS (Atypical glandular cells of undetermined significance)

Discussion:-

The incidence of cervical cancer is quite high because prevention programs are either non-existent or poorly implemented. The Pap smear test used as a screening method to detect cervical cancer is an effective way to prevent the development of cervical cancer, but awareness within the community about the Pap smear test is very low.

The aim of cancer screening is to decrease morbidity, mortality and the costs. Cervical malignant lesions have been extensively investigated for many years with cytological, histological and physical diagnostic methods. According to our current knowledge, it is assumed that cervical cancer does not appear suddenly, premalignant lesions vary from person to person, they become invasive at the end of a certain period of time, and even these premalignant lesions are a certain extent.^[5]

In the present study, majority age of the study subjects was between the age group of 41 to 60 years with a minimum age of 19 years, maximum age of 98 years and the mean age was 49.76 ± 12.57 years. This in contrast with studies of Mwenze Didier et al^[6] and Ferah Tuncel Daloglul et al.^[7] the mean age was reported as 39 ± 8.4 years and 39.74 ± 11.24 years respectively.

The study of Ferah Tuncel Daloglul et al^[7] (n=8495) showed the inflammation in 65.5 % cases, Candida ifection in 3.3% cases and both the findings are comparable with our present study. But prevalence of other diagnoses like NILM only (17.4%), atrophy (8.5%), actinomycosis (0.6%) and bacterial vaginosis (4.3%) are quite different from our study, which might be due to different geographic distribution of conditions or variation in age group of patient, attending the outdoor services.. Few studies^[8, 9] reported that women with persistent inflammation should be appropriately treated; otherwise, the chance of development of cervical intraepithelial lesions increases. A repeat Pap smear should be taken after proper antibiotic treatment.

In the present study, epithelial cell abnormality was found in 0.51 % with ASC-US being most commonly encountered abnormality, i.e. 0.33% , while the other studies like Saha et al.^[10] (n=287) reported 9.05% cases of epithelial cell abnormality with 5.92% cases with ASCUS, 1.74% cases of LSIL, 0.35% cases of HSIL, 1.04% cases of squamous cell carcinoma. Gupta et al^[11] (n=4703) reported 3.23% epithelial cell abnormality with LISL in 1.36%, HISL in 0.9% and squamous cell carcinoma in 0.23% whereas Vaghela et al^[12] reported that LISL was the most common epithelial abnormality, found in 12.4% of their individuals followed by HISL in 5% of the cases. Verma et al.^[13] found ASCUS in 1%, LSIL in 5.5%, and HSIL in 2.5% of their screened women. Padmini et al.^[14] also reported ASCUS in 8%, LSIL in 5% and HSIL in 3% in women screened with Pap smear test. Where as 8.6% LSIL and 3.8% HSIL lesions were found in a study by Nayani and Hendre.^[15]

High incidence of epithelial cell abnormalities are suggestive of cervical cancer as these abnormal epithelial cells if not treated may develop in precancerous conditions of the cervix which ultimately turn into cervical cancer. The high prevalence of cytological abnormality observed in Indian studies might be due to cultural differences, age of the individuals, incidence of related infections, awareness about screening, and the presence or absence of cervical screening programs in different parts of the country. A Saudi Arabian study^[16] had a 4.9 % detection rate for the epithelial pathological diagnosis of SIL. The higher SIL rate was a result of a lack of awareness about screening and a lack of screening programs.

For the studies with small sample size and limited power, additional studies including detection of HPV DNA in combination with Pap stain need to be conducted with larger cohorts to confirm these results.

Conclusion:-

The Pap smear test is a very useful, simple, and economical tool for detecting genitor-urinary tract infections and precancerous cervical epithelial lesions. Hence, Pap stain should be established as a routine screening procedure to reduce the treatment burden, morbidity and mortality. Every woman above the age of 30 years should undergo routine cervical screening, even into the postmenopausal period. When the Pap test is combined with an HPV DNA test, the sensitivity for detection of cervical pathology is increased. The community should be educated about the Pap smear test, including its goal and the required frequency of application, by widespread educational and media programs.

Table 1:- Demographic profile of the women screened for Pap smear test.

Age group	Number of case (Percentage)	Mean age (Years)	Std Dev ± 2
<20 years	04 (0.10%)	49.76	12.57
21-30 years	261 (6.74%)		
31-40 years	694 (17.93%)		
41-50 years	1056 (27.28 %)		
51-60 years	1062 (27.43%)		
>60 years	794 (20.51%)		
Total	3871		

Table 2:- Cytological adequacy of Pap smears and status of Endocervical / Transformation zone component.

Type of smears	Satisfactory (Adequate)	Unsatisfactory (Inadequate)	TOTAL
Conventional cervical smear	2941 (97.2%)	85 (2.8%)	3026 (78.17%)
	Endocervical / Transformation zone component		
	Present Absent		
	1104 (37.53%) 1837 (62.47%)		
Conventional vault smear	757 (89.6%)	88 (10.4%)	845 (21.83%)
Total	3698 (95.53%)	173 (4.46 %)	3871

Table 3:- Distribution of Cytological abnormalities with Mean age (n=3871).

Diagnosis	Number of cases (%)	Mean Age	Minimum Age	Maximum age
NILM only	386 (9.97%)	47.00	22	91
Inflammation	2724 (70.36%)	47.86	19	98
1. Mild	1168	51.08	19	90
2. Moderate	1016	48.20	21	98
3. Severe	540	44.38	20	80
Atrophy	1345 (34.74%)	59.06	22	98
Candida	130 (3.35%)	47.92	22	72
Actinomyces	03 (0.08%)	45.66	35	59
Bacterial Vaginosis	717 (18.52%)	48.98	19	87
Trichomonas vaginalis	20 (0.51%)	42.95	31	68
Squamous Epithelial abnormality	20 (0.51%)	54.50	36	70

Table 4:- Distribution of Epithelial cell abnormalities (n = 20).

Diagnosis	Number of cases
ASC-US	13
ASC-H	01
LSIL	01
HSIL	02
AGUS	03

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