Original Research Article

A study of the age profile, diagnosis, type of sample, adequacy of sample and the results of patients undergoing cervical cytology at a tertiary care center

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ABSTRACT

Background: Carcinoma of cervix is the most common genital malignancy in India. It is an indolent cancer which can be picked up at an early stage using screening methods such as Papanicoloau smear and liquid based cytology. The present study was undertaken to analyze the age distribution, diagnosis, type of sample, adequacy of sample and results of patients undergoing cervical cytology screening.
Methods: The study was conducted using 300 random cytology reports from the pathology department of a tertiary care center in the period of 5 months from January 2019 to May 2019. Patient's data was collected and analyzed.
Results: The percentage of patients in each age group undergoing cervical cytology was: 21-30 years (7.4%), 31-40 years (14.6%), 41-50 years (36%), 51-60 years (30.7%), 61-70 years (10.7%) and 71-80 years (0.6%). The most common diagnosis/indication for doing cervical cytology is screening (41.6%), followed by abnormal uterine bleeding (24%). 95% of samples sent for cytology were liquid based cytology. Among the 300 samples sent to the pathology department for cervical cytology, 290 were adequate for opinion (97%) and 10 were inadequate for opinion (3%). The results are as follows: negative for intraepithelial lesion or malignancy (68%), inflammatory smear (8%), ASCUS (6%), ASC-H (3%), LSIL (9%), HSIL (6%).
Conclusions: Most samples belonged to the age group of 41-50 years. Common indication being screening. Most samples were adequate for opinion. Most commonly, they were reported as negative for intraepithelial lesion or malignancy.

Keywords: Carcinoma cervix, Cervical cytology, Papanicoloau smear

INTRODUCTION

Carcinoma of the cervix continues to be the most common genital cancer encountered in clinical practice in India (80%). Five lakh new cases are reported annually world over. In India alone, 1,30,000 new cases occur with the death toll of 70,000 cases every year. Cancer of the cervix accounts for 15% of all cancers in women. The prevalence rate is 2.3 million annually globally. In India, it is 13-24 lakhs per year and 75% are in the advanced stages.[1] The term cervical intraepithelial neoplasia denotes a continuum of disorders from mild through moderate to severe dysplasia and carcinoma in situ.[2] Cytological screening can clearly identify these premalignant conditions 10-15 years prior to invasive cancer. There has been a major decline in the incidence of cervical SCC over time in several European countries, the consequence of the implementation of effective cytologic screening.[3] There are many methods to screen women for cancer cervix. In resource poor settings, methods such as visual inspection (VI), visual inspection with acetic acid (VIA), visual inspection post Lugol's iodine (VILI), point of care HPV testing can be done. This has often been referred to as "Down staging of cancer cervix".[4-6,16] In centers where

adequate resources are available, the methods used are Papanicolaou smear (PAP smear), liquid based cytology (LBC) and HPV DNA testing. In our center, PAP smear and liquid based cytology are used. These screening techniques have been successful in reducing the incidence of invasive cancer by 80% and it's mortality by 60% in developed countries.[1,12]

The American College of Obstetrics and Gynecology (ACOG) and United States Preventive Task Force (USPTF) have given clear guidelines on the frequency of cancer cervix screening. The cancer cervix screening starts at the age of 21, done at 3 yearly intervals using Pap smear or LBC alone, without HPV cotesting. HPV cotesting is not recommended before the age of 30 years. From age of 30 to 65 years, screening is done 3 yearly with Pap smear or LBC alone, 5 yearlies with PAP smear or LBC with HPV cotesting. It is stopped at the age of 65 years provided the last 3 smears were Negative for Intraepithelial lesion or malignancy (NILM). It is also discontinued after hysterectomy unless the indication for hysterectomy was cervical intraepithelial neoplasia 2 or 3.[7,14] The smears are reported according to Bethesda system, which was revised in the year 2014.[8,13,15]

Aim

To study the age profile, diagnosis, type of sample, adequacy of sample and the results of patients undergoing cervical cytology at a tertiary care center.

Objectives

To study the age profile of patients undergoing cervical cytology at a tertiary care center. To analyze what was the diagnosis of patients undergoing cervical cytological at a tertiary care center. To understand what was the type of sample collected for cervical cytology- PAP smear or liquid based cytology. To infer how many samples sent to the pathology department (cytology section) of a tertiary care centre for cervical cytology, were adequate. To understand the results and findings of patients undergoing cervical cytology at a tertiary care center.

METHODS

Sampling

300 reports of cervical cytology samples analyzed at the pathology department (cytology section) of a tertiary care centre during the course of 5 months from January 2019 to May 2019.

Inclusion criteria

Cervical cytology reports having all the necessary information were included in the study, including age of patient, diagnosis, type of sample, it's adequacy and the result.

Exclusion criteria

Reports lacking vital information such as age of patient, diagnosis, type of sample, it's adequacy and the result, were excluded from the study.

Study design

It was a retrospective cross-sectional study.

Process

300 smears collected and analyzed in the 5 months period from January 2019 to May 2019 at pathology department (cytology section) of a tertiary care centre were included in the study. As reports maintained by the department were used, consent from the patients was not taken.

The data from the report such as age of the patient, diagnosis, type of sample, its adequacy, the result was collected, meticulously analyzed and reported in the form of frequency tables and charts. The reports also contained information such as name of the patient, date of reporting et cetera, which were not used for analysis.

Statistical analysis

The data from the study was analyzed. The age distribution of the patients was treated as a polychotomous variable, was depicted on a frequency distribution and pictorially depicted using a bar chart. The type of cytology testing as well as its adequacy were treated as dichotomous variables, depicted using tables and pictorially depicted as pie charts. The diagnosis at the time of cytology screening was treated as polychotomous variable, depicted on a table and represented using bar charts. The result of the smear was treated as polychotomous variable, depicted on a table and represented using bar charts.

RESULTS

The results of the study are as follows. The age profile of patients undergoing cervical cytology has been represented in Table 1. The percentage of patients in each age group undergoing cervical cytology was: 21-30 years (7.4%), 31-40 years (14.6%), 41-50 years (36%), 51-60 years (30.7%), 61-70 years (10.7%) and 71-80 years (0.6%).

Table 1: Age distribution of patients.

Age of patient	Number of patients
21-30	22
31-40	44
41-50	108
51-60	92
61-70	32
71-80	2
Total	300

The diagnosis of patients undergoing cervical cytology has been depicted and represented in Table 2. The most common diagnosis/indication for doing cervical cytology was screening (41.6%). This was followed by abnormal uterine bleeding (24%), post-menopausal bleeding per vaginum (6.6%), uterovaginal prolapse (5%), fibroid uterus (4%), cervical erosion (3%), screening in HIV+ patient (3%), adnexal mass (3%), pelvic inflammatory disease (2%), adenomyosis (2%), cervical polyps (1.6%), rectovaginal fistula (1%), post-coital bleed (3%), bacterial vaginosis (3%) and candidiasis (3%).

Table 2: Diagnosis of patients undergoing cervical cytological studies.

Diagnosis of patients undergoing cervical cytological studies	Number of patients
Screening for cancer cervix	125
Abnormal uterine bleeding	72
Post-menopausal bleed (per vaginum)	20
Uterovaginal prolapse	15
Fibroid uterus	12
Cervical erosion	9
Cancer cervix screening in HIV patient	9
Adnexal mass	9
Pelvic inflammatory disease	6
Adenomyosis	6
Cervical polyps	5
Rectovaginal fistula	3
Post-coital bleed	3
Bacterial vaginosis	3
Candidiasis	3
Total	300

The type of sample sent to the pathology department (cytology section) of a tertiary care centre for cervical cytology was analyzed. 95% of samples sent for cytology were liquid based cytology. 5% of samples were Papanicolaou smears. This has been depicted in Table 3.

Table 3: Type of sample for cervical cytology.

Type of sample	Number of samples
Liquid based cytology	286
Papanicolaou smear	14
Total	300

Table 4: Adequacy of cervical cytology sample.

Adequacy of sample	Number of samples
Adequate for opinion	290
Inadequate for opinion	10
Total	300

Among the 300 samples sent to the pathology department (cytology section) of a tertiary care centre for cervical cytology, 290 were adequate for opinion (97%) and 10

were inadequate for opinion (3%). These figures have been represented and depicted in Table 4.

Table 5: Reporting of cervical cytology samples.

Reporting as per Bethesda system	Number of samples
Negative for intraepithelial lesion or malignancy	198
Inflammatory smear	20
Atypical squamous cells of unknown significance (ASCUS)	16
Atypical squamous cells- high grade squamous intraepithelial neoplasia cannot be excluded (ASC-H)	12
Low grade squamous intraepithelial neoplasia (LSIL)	26
High grade squamous intraepithelial neoplasia (HSIL)	18
Total	290

Among the 290 samples adequate for opinion, analysis was done and reported according to Bethesda system, revised in 2014. The results are as follows: negative for intraepithelial lesion or malignancy (68%), inflammatory smear (8%), atypical squamous cells of unknown significance (ascus) (6%), atypical squamous cells- high grade squamous intraepithelial neoplasia cannot be excluded (ASC-H) (3%), low grade squamous intraepithelial neoplasia (9%), high grade squamous intraepithelial neoplasia (6%). There were no reports with the result of squamous cell carcinoma, atypical glandular cells, atypical glandular cells favouring neoplasia, adenocarcinoma in situ.

DISCUSSION

From the cross-sectional study of 300 reports of cervical cytology at the pathology department (cytology section) of a tertiary care center, certain inferences can be made. Vast majority of patients undergoing cervical cytology belonged to the age group 41-50 years (36%), followed by 51-60 years (30.7%). These results are in line with the study conducted in Europe and North America where they reported that the majority of the samples for cervical cytology belonged to the age group 41-50 years (42%).[9] The most common diagnosis/indication for doing cervical cytology was screening (41.6%), followed by abnormal uterine bleeding (24%). Majority of samples sent were liquid based cytology (95%). 5% of samples were Papanicolaou smears. This is in agreement with the study conducted in 13 European countries where they have reported a dramatic fall in incidence of cervical cancer with effective screening practices.[3] Around 97% of the samples were adequate for opinion by the cytopathologist but 3% were inadequate for opinion. This again, is correlated by a study comparing the effectiveness of Papanicolaou smear and liquid based cytology in picking up dysplastic cells where they have reported that 99% of

the samples were adequate for opinion.[10] After analysis, the most common result was negative for intraepithelial lesion or malignancy (68%), followed by inflammatory smear (8%), atypical squamous cells of unknown significance (ASCUS) (6%), atypical squamous cells- high grade squamous intraepithelial neoplasia cannot be excluded (ASC-H) (3%), low grade squamous intraepithelial neoplasia (9%), high grade squamous intraepithelial neoplasia (6%). There were no reports with the result of squamous cell carcinoma, atypical glandular cells, atypical glandular cells favouring neoplasia, adenocarcinoma in situ. A study conducted in rural India provided similar results where a majority of their sample population subjected to screening were reported as NILM (87%), but this study also has reported significant numbers of CIN1 (6.9%), CIN 2 or 3 (4.2%), invasive cancer of cervix (1.6%).[11,16]

The study is not without limitations. The study duration was of 5 months, which can be extended for a longer duration so that a larger number of samples can be analyzed. Also, the study was conducted at a single center. A better option would be to carry out the study at different centers with same standard of reporting cytology specimens.

CONCLUSION

This study depicts the profile of the patients undergoing cervical cytology at a tertiary care centre. Most samples belonged to the age group of 41-50 years. Common indication being screening. Most samples were adequate for opinion. Most commonly, they were reported as Negative for Intraepithelial lesion or malignancy.

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