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An Observational Study to Ascertain a Proportion of Pap Cervical Screening Results with Liquid-Based Cytology (LBC)

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ABSTRACT

The objective of this study was to address this preventable cancer burden and also to determine a fraction of pap cervical smear finding through LBC. From the period of two years, a retrospective record review was performed for a total of 200 women who were referred from Department of Obstetrics and Gynecology for Pap cervical smear to the Department of Pathology. Most women with aberrant cytology had ASC-US (50%), LSIL (4%), ASC-H (26%) and HSIL (14%). The main symptoms of women with abnormal cytology were lower abdominal discomfort (24%) and white vaginum discharge (21%). Cytology category did not correlate with primary complaints. The study used representative data to address disease burden, highlight the need for comprehensive screening programs and HPV testing for universal management and treatment according to national standards. Due to less unacceptable smears, LBC may be better than conventional.

INTRODUCTION

Cervical cancer ranks as the second most prevalent malignancy among women in India[1]. The identification of its premalignant lesions is critically important and may be readily accomplished by screening procedures. The cornerstone of cervical cancer screening is the Papnicolaou (Pap) smear. The appropriate adoption of screening measures has significantly reduced morbidity and death associated with cervical malignancies[2]. Two papers in BMJ evaluate the precision of liquid-based cytology vs traditional cytology[3,4]. The randomized experiment conducted by Ronco and associates revealed no significant difference in sensitivity for cervical intra epithelial neoplasia of grade 2 or higher between liquid-based cytology utilizing ThinPrep (Cytyc, Box borough, MA, USA) and traditional cytology[3]. Nevertheless, liquid-based cytology yielded more favorable outcomes, resulting in a diminished positive predictive value. Davey and colleagues conducted an observational research to evaluate the accuracy of the automated ThinPrep imaging system with traditional cytology, utilizing split sample pairs where the ThinPrep sample was collected subsequent to the conventional sample in a single collection. Four The ThinPrep Imager identified 1.29 more occurrences of histological high-grade squamous disease per 1000 women screened compared to traditional cytology, with cervical intra epithelial neoplasia grade 1 serving as the referral threshold for colposcopy. Numerous firms have created liquid-based cytology equipment. The literature assessing them is comprehensive and diverse. The majority are observational studies, either split-sample studies or studies that compare outcomes with prior results from the same laboratory[5]. Various national screening programs and organizations, including the Food and Drug Administration, have assessed the evidence for liquid-based cytology and reached divergent results., nonetheless, the majority of reviews have resulted in adoption[6,7]. Among the limited randomized controlled studies, those deemed good quality have generally demonstrated no change in sensitivity compared to liquid-based cytology[8]. The abundance of contradictory data poses challenges for global screening programs attempting to determine implementation strategies within their respective contexts. Cervical screening has exhibited different degrees of efficacy across various nations. The incidence of substandard conventional smears ranges from 9.5% in the United Kingdom to less than 1% in other regions. Abnormality detection rates fluctuate, even when accounting for terminological differences and are affected by screening sensitivity, disease incidence within the population, population coverage, initiation age for screening and screening frequency-all of which differ among countries. The UK has one of the highest sensitivities for identifying abnormalities in a single traditional smear[9], alongside one of the longest screening intervals (three or five years, dependent on age) and substantial population coverage (exceeding 80%). In many nations, women may get smears biannually, whereas screening every 12-24 months is prevalent. The aim of this study was to tackle the avoidable cancer burden and to ascertain a proportion of pap cervical screening results with liquid-based cytology (LBC).

MATERIALS AND METHODS

A retrospective record review was conducted over two years involving 200 women referred from the Department of Obstetrics and Gynaecology to the Department of Pathology for Pap cervical smears. A cervical Pap smear sample was obtained by qualified staff in accordance with the manufacturer's procedure for liquid-based cytology (LBC). The LBC approach effectively collects whole cellular samples within a uniform, restricted region, hence enhancing visibility, evaluation and cellular preservation. Samples were processed and stained within 24 hours after receipt, and the slides were evaluated by the pathologist in accordance with the most recent Bethesda system of reporting (TBS 2014). Information on the patient's age, marital status, reproductive history, present gynecological symptoms (if applicable), date of the Pap smear conducted and its result was obtained from the pre-filled proforma. Following screening, all participants retrieved their results and were sent to the Department of Obstetrics and Gynaecology to ensure that those with abnormal cytology had additional assessments and received appropriate treatment.

Statistical Analysis: The data was analyzed using SPSS version 22.

RESULTS AND DISCUSSIONS

Table 1: Abnormal Cytology Classification

Cytology category	Abnormal n	%
Malignant	12	6
HSIL	28	14
ASC-H	52	26
LSIL	8	4
ASC-US	100	50

It was observed that among women with abnormal cytology, majority of the cytology presented as ASC-US with 50%, LSIL 4%, ASC-H 26%, 14% were High grade squamous intraepithelial lesion (HSIL).

Table 2: Common Complaints Among Screened Positives

Complaints	Abnormal n	%
White discharge	42	21
Pain lower abdomen	48	24
Routine	44	22
Postmenopausal bleeding	6	3
Menorrhagia	12	6
Prolapse	12	6
Spotting	20	10
Irregular Periods	16	8

The chief complaints among women with abnormal cytology were pain in the lower abdomen (24%), white discharge (21%). However, there was no significant correlation between chief complaints and cytology category. Human papillomavirus (HPV) infection, transmitted sexually, is the primary risk factor for the morphological continuum of squamous changes[10]. Additional indicators encompass the age range of 35-45 years, first intercourse prior to 18, first childbirth before 20 and numerous sexual partners. Liquid-based cytology (LBC) has received approval from the US Food and Drug Administration to improve the efficacy of traditional Pap (CP) smear processing for cervical samples[11]. The benefits of LBC include a reduced incidence of unsatisfactory smears, a clear backdrop, uniform distribution of cellular material, the capability for HPV testing with residual cellular material and shortened screening duration[12]. Among women with aberrant cytology, the majority exhibited ASC-US at 50%, followed by LSIL at 4%, ASC-H at 26% and 14% presenting as high-grade squamous intra epithelial lesion (HSIL). The primary symptoms among women with abnormal cytology were lower abdominal discomfort (24%) and vaginal white discharge (21%). Nonetheless, no substantial link existed between main complaints and cytology category. The American Cancer Society recommends that women aged 30-65 have a PAP test and HPV test every five years. Women at elevated risk for cervical cancer should have more frequent screening. A Pap smear is a cytological examination intended to identify atypical cervical cells. The limited sensitivity of an individual Pap test necessitates periodic screening of women, approximately every 3-5 years[13]. LBC is an alternate method for the screening and identification of precancerous lesions. This procedure involves washing the cells into a vial of liquid, filtering them and preparing the sample as a thin layer on a glass slide. The slides are either examined by a qualified individual or analyzed using automated imaging. It is extensively utilized in several industrialized countries. While these methods seem promising, they are costly and significantly dependent on technology[13]. A research conducted in a hospital setting in Madhya Pradesh evaluated outcomes across urban and rural regions. The percentage of SIL in rural areas was 10.5%, significantly greater than the 4.5% SIL seen in metropolitan areas[14]. A separate hospital-based cervical screening conducted over one year with a sample size of 1,650 revealed a 5.57% incidence of SIL[15]. A research conducted over 35 years in a hospital-based cytological screening in Lucknow indicated a 7.2% prevalence of SIL in 36,484 samples, which is close to our findings[16]. The Federation of Obstetric and Gynecological Societies of India (FOGSI) endorses two FDI-approved vaccines: the Bivalent (Cervarix, GSK) and Quadrivalent (Gardasil, Merck), which are recommended for administration to individuals aged 9-14 years. The federation advises employing the most effective strategy for screening, training and managing patients, based on resource availability and thorough follow-up and treatment[17]. Cervical cancer is a preventable malignancy that, when detected early, is among the most effectively curable types of cancer[18].

CONCLUSION

Through the use of representative data, the study was able to address the illness burden, bring attention to the necessity of an efficient screening program and demonstrate the availability of HPV testing in order to achieve consistency in the care and treatment of the condition in accordance with established national standards. Due to the decreased incidence of unsatisfactory smears it produces, LBC has the potential to be a more effective alternative to traditional smears.

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