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Original Research Paper

Pathology

DETECTION OF CERVICAL CYTOLOGICAL ABNORMALITIES BY CONVENTIONAL PAP SMEAR METHOD USING LATEST BETHESDA CRITERIA AT TERTIARY CARE HOSPITAL

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ABSTRACT **Introduction:** Cervical cancer is one of the leading malignancies among women in India. Pap smear (conventional method) is the most widely used cervical cancer screening test. In developing countries like India, there is a great need for mass screening program for detection of cervical lesion. **Aim:** To evaluate the abnormal cytological entities detected by pap smear and to classify the cytological findings according to 2014 Bethesda system. **Materials and Methods:** This is a hospital based study of conventional cervical smears received between May 2020 to June 2022 . For evaluating the Pap smears, the Bethesda system (2014) for reporting cervical cytology was used. **Results:** In the study period, 1418 cases were valuated. Age of women ranged from 19 to 92 years. Most common complaint was irregular bleeding per vagina and leucorrhea. 82.08% belonged to NILM category, 9.3% were unsatisfactory for evaluation. ASCUS accounted for 4.87%, ASC-H 0.56%, LSIL1.83%, HSIL0.77%, AGC 0.28% and SCC 0.28% of cases. **Conclusion:** It was found that negative for intraepithelial malignancy cases common in our set up.

KEYWORDS : Bethesda system, Cervical cancer, Cervical cytology, Papanicolaou smear.

INTRODUCTION

Cancer of cervix is the third most common cancer in women[1]. It is the second most common cause of death from cancer in women[2]. It is estimated that in India, 1,26,000 new cases occur each year[3]. The incidence of cervical cancer has decreased by more than 50% in the past 30 years, due to the increasing use of cervical cancer screening with cervical cytology[4]. The mainstay of cervical cancer screening was Papanicolaou test . It was developed by Dr. George Papanicolaou in the 1940s who discovered that precancerous and cancerous cells could be identified in cytologic samples from vaginal aspirates[5]. Unlike most other malignancies, cancer of cervix is readily preventable when effective programmes are conducted to detect and treat its precursor lesions[3]. The screening coverage in India is mainly attributed to inequality between infrastructure, resources and outsized population[6].

The Bethesda System (TBS) for reporting the results of cervical cytology was developed as a uniform system of terminology that could provide clear guidance for clinical management[7].

Aim

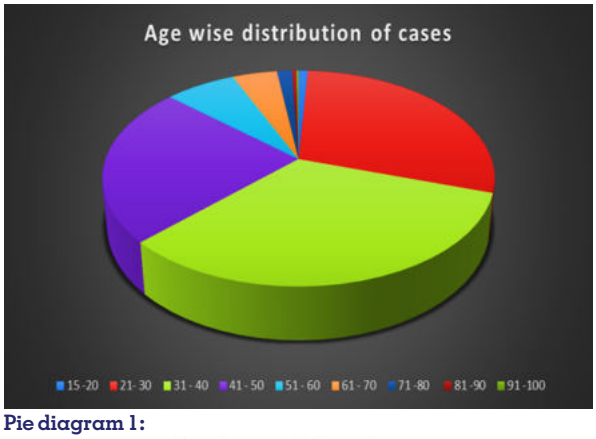
The present study was undertaken to determine the frequency of premalignant and malignant lesions of cervix and to study the clinicopathological aspects of various cervical lesions.

MATERIALS AND METHODS

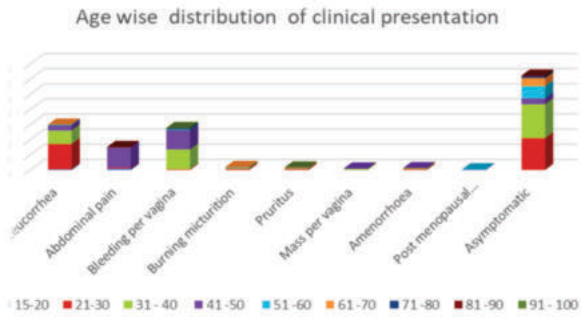
This is a Retrospective study of conventional cervical smears received, processed and reported in the Department of pathology, Government medical college and tertiary care hospital in Anantapuramu district of Andhra Pradesh state, India over a period of two years from May 2020 to June 2022 Institutional research cell and Ethics Committee approval was taken for the study. All women who underwent Papanicolaou (Pap) smear testing during this period were included in the study. Women who presented to gynaecology out-patient department with complaints of vaginal discharge, post coital bleeding, intermenstrual bleeding and pain in lower abdomen were subjected to Pap test. Pap smears obtained from the squamocolumnar junction by 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 the central laboratory, the slides were stained with hematoxylin and eosin stain and examined under light microscope. The interpretation of the pap smears was made using The Bethesda System 2014 (TBS).

RESULTS

A total of 1418 cases were analysed during the study period. Age of the women ranged from 18-92 years. Most of the women were in the age group of 31-40 years (Pie diagram 1).



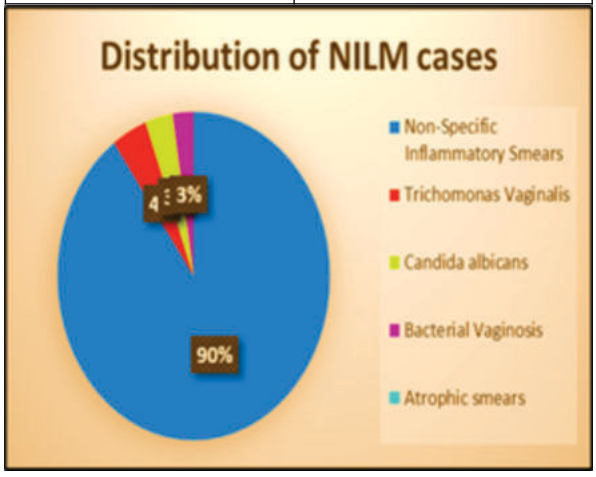
Pie diagram 1:



Histogram 1: Age wise distribution of clinical presentation

Table 2: Cervical Lesions Cytology Interpretation/Results By The Bethesda System (2014)

Interpretation /Results	Number of cases and percentage
Unsatisfactory for evaluation	132 (9.3%)
NILM	1164(82.08%)
ASC-US	69 (4.87%)
ASC-H	08 (0.56%)
LSIL	26 (1.83%)
HSIL	11 (0.77%)
SCC	04 (0.28%)
AGC	04 (0.28 %)
Total	1418



Pie diagram 2

NILM - Negative for intraepithelial lesion or malignancy

ASC-US: Atypical Squamous Cells of Undetermined Significance.

ASC-H: Atypical Squamous Cells cannot exclude High grade squamous intraepithelial lesion.

LSIL: Low-grade Squamous Intraepithelial Lesion.

HSIL: High-grade Squamous Intraepithelial Lesion.

SCC : squamous cell carcinoma

AGC: Atypical Glandular Cells

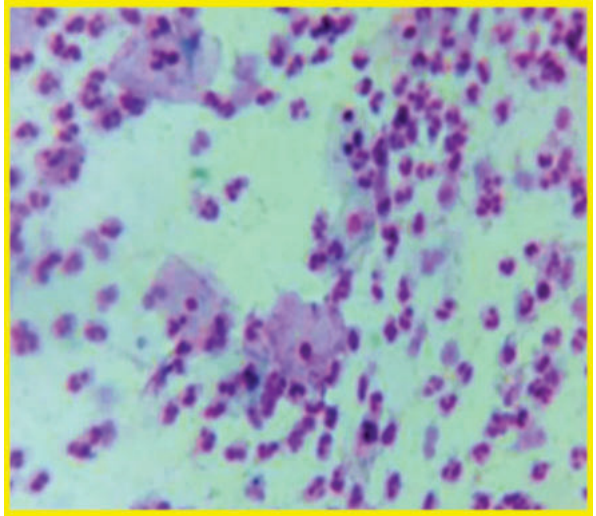


Fig. 1: NILM with non-specific inflammation (x40) Smear showing superficial squamous epithelial cells and numerous acute inflammatory cells

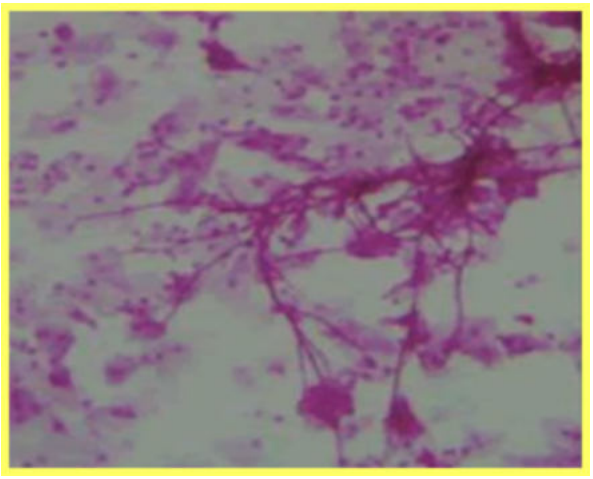


Fig. 2: NILM with non-specific inflammation (x40) Smear showing candida psuedohyphae

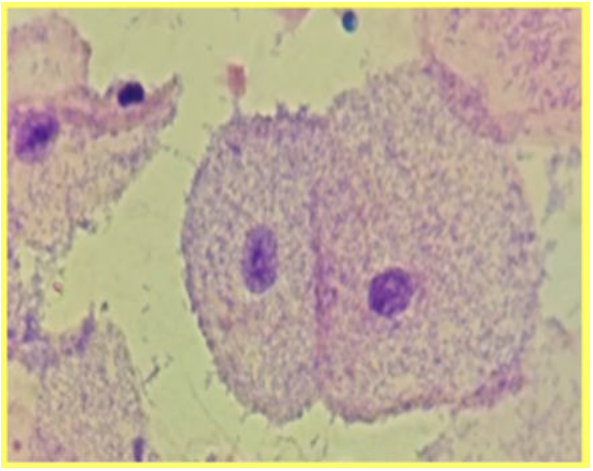


Fig. 3: Bacterial vaginosis (x100) Smear showing nuclear enlargement of superficial squamous epithelial cells

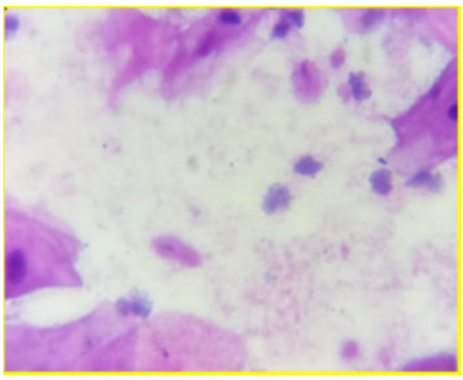


Fig. 4: NILM with (x40) smear showing Trichomonas vaginalis

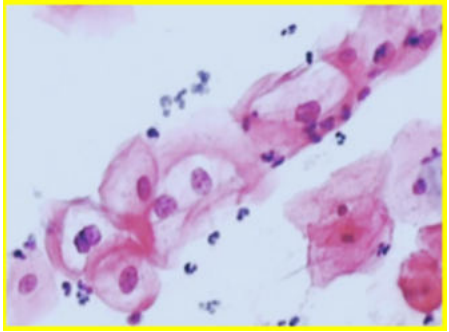


Fig. 5: Low grade squamous intraepithelial lesion (x100)

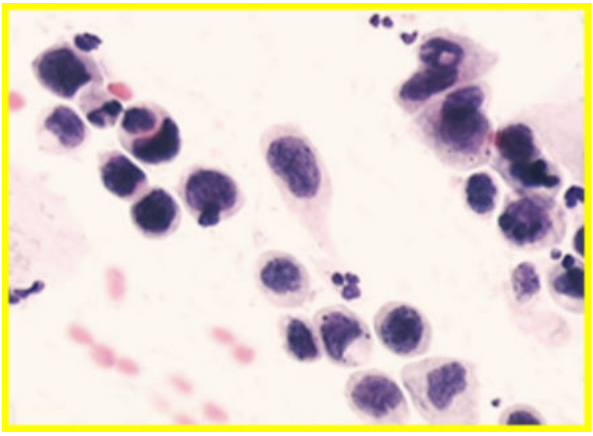


Fig. 6: High grade squamous intraepithelial lesion (x100)

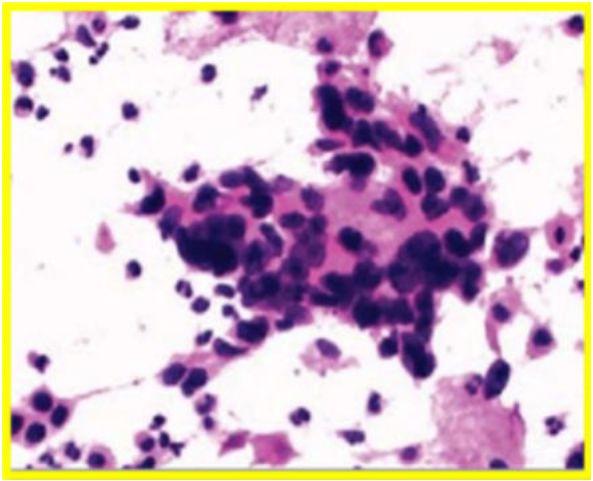


Fig. 7 : Squamous cell carcinoma (x100)

Irregular bleeding per vagina, leucorrhea, backache, abdominal pain, burning micturition and pruritus were the common presenting features (Histogram: 1). 132 smears (9.3%) were found to be unsatisfactory for evaluation and 1164 were Negative for Intraepithelial Lesion/ Malignancy (NILM). The remaining smears belonged to various categories as shown in Table 2 . 1164 cases reported as NILM (Fig. 1) had cytological features of various conditions as shown in Pie diagram 2.

DISCUSSION

Prevention of cervical cancer is of two ways , either primary or secondary[8]. Primary prevention strategies include changes in sexual behavior and Human Papilloma Virus (HPV) vaccination. Secondary prevention includes visual inspection of cervix (VIA), HPV testing and cytology. Pap smear is secondary prevention method to identify the premalignant and malignant lesions, which needs follow-up and/ or treatment[9].

Pap smear has excellent specificity (95%) while sensitivity is moderate (44-74%)[10]. Newer techniques like liquid based cytology (LBC) reduce the number of inadequate smears, but it is expensive[10].

Out of 1418 cases subjected to Pap test, most of the were in the fourth decade of life similar to the studies of Nikhumb et al[12] and Bhojani et al[13]. There were 3 cases aged more than 90 years who had NILM.

Irregular bleeding per vagina and menorrhagia are the main symptoms followed by leucorrhea and lower abdominal pain. Menorrhagia was seen mainly in cases in the fourth decade of life. Many had leucorrhea with pain abdomen. Leucorrhea was the predominant symptom in the studies of Bhojani et al (46.5%)[13], Rajput et al (73.5%)[6] and Nikhumb et al (69.3%)[12].

Conventional Pap test was found to have false negative rate of about 14-33% approximately two thirds of which is due to limitation of sampling and slide preparation[5]. These limitations may lead to inaccuracy and equivocal diagnosis.132 smears were found to be unsatisfactory in the present study, most of them were of cases in 6th decade[6].

In the present study it was found that premalignant and malignant lesions of cervix is not common in our set up. Pap smear is a simple, safe and effective test to detect cervical lesions at an early stage and helps the clinician in efficient management of these cases. It also has a greater role in diagnosis of inflammatory lesions including the identification of causative organism and atrophic changes. accessibility of squamo-columnar junction in cases of prolapse of uterus. Unsatisfactory smears were 4.8% (Vaghela e al)[11], 5.71% (Bamanikar et al)[1] and 4.5% (Rajput et al)[6] in other studies.

Pap smear is an integral part of the comprehensive health care of women[12]. Besides being a tool of cancer diagnosis, it is used for the identification of infections such as trichomonas, herpes and HPV as well as for the classification of the hormonal pattern. Smears with inflammatory changes were seen mainly in women in the reproductive age group. Non-specific inflammatory smears formed the majority of cases in the studies of Nikhumb et al[12], Bhojani et al[13] and Vaghela et al[11]. NILM included non-specific inflammation (Fig. 1,2 and 3,4), atrophy, trichomoniasis, candidal infection, bacterial vaginosis and herpes simplex viral infection.

In the present study, majority of LSIL (Fig .5) cases were detected in the fifth and sixth decades. HSIL(Fig. 6) was in age group of fourth to eighth decades .Majority of the cases with an abnormal Pap smear (LSIL or HSIL) belonged to the fourth decade in the study of Jana et al[14] and Nair et al[15]. LSIL is seen in earlier age group than HSIL and invasive carcinoma in studies of Bal et al[3] and Elthakeem et al[16]. ASCUS constituted 4.87% of cases, majority of them in the fourth and fifth decades. One case each of LSIL, ASC-H and ASCUS were seen in women in the 9th decade of life.

When abnormal cells are seen in a Pap smear, colposcopy is often indicated which may be followed by colposcopic biopsies. Diagnosis and treatment of cervical cancer precursors prevents subsequent development of cervical cancer. Detection of SCC (Fig. 7) is probably due to failure of regular screening programmes.The limitation of this study is that it is a hospital based study which may not be a true reflection of the local population.

There is an urgent need for community sensitization on how to prevent cervical cancer by providing free cervical cancer screening and HPV vaccine for adolescent girls to lower the incidence of cervical cancer in our country.

Health care professionals should educate people about the benefits of Pap test. Pap smear screening has the following limitations in India[12]: (1) Women do not participate in regular screening programmes due to ignorance and lack of education about prevention by screening, cultural taboo about sexually transmitted diseases, lack of support from family, and poor socioeconomic status. (2)

Clinicians may fail to obtain an adequate smear, do proper follow up and treatment, and may not counsel women that prevention is better than cure. (3) Pathologist may be incorrect in interpretation of smears and many areas lack a cytotechnologist for staining and smear interpretation[13].

CONCLUSIONS

In the present study it was found that negative for intraepithelial malignancy cases common in our set up. Pap smear is a simple, safe and effective test to detect cervical lesions at an early stage and helps the clinician in efficient management of these cases. It also has a greater role in diagnosis of inflammatory lesions including the identification of causative organism and atrophic change.

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