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INVESTIGATION OF THE CYTOLOGICAL PATTERN OF A CERVICAL PAPANICOLAOU SMEAR IN A MEDICAL COLLEGE USING THE BETHESDA SYSTEM

Dr. Anshul Kumar[1], Dr. Sangeeta Singh[2]

[1]Assistant Professor, Dept. of Pathology Krishna Mohan Medical College & Hospital, Pali Dungra, Sonkh Road, Mathura

[2]Associate Professor, Dept. of Pathology Krishna Mohan Medical College & Hospital, Pali Dungra, Sonkh Road, Mathura

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Corresponding author: Dr. Sangeeta Singh

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Abstract

Background: Cervical cancer has emerged as a prominent cause of morbidity and mortality in emerging nations such as India. Cervical cancer has become the commonest cancer cause of death in female in developing nations. Developing nations are responsible for over 80% of the global load.

Aim: The goal of this research was to look at the cytology of 300 cervical Pap-smears and classify them according to Bethesda-2014. To demonstrate the importance of this Pap-smear examination in distinguishing between pre-malignant and malignant tumours.

Materials and Methods: A total of 300 Papaincolaou smears from Central India, ranging in age from 22 to 80 years, were studied retrospectively during a two-year period in the cytology section of the Pathology department.

Results: Out of 300 cases, the majority were negative for intra-epithelial lesion or malignancy 247 cases (82.3%), followed by atypical squamous cells of undetermined significance 16 cases (5.33%), low-grade squamous intra-epithelial lesion 8 cases (2.66%), high-grade squamous intra-epithelial lesion 3 cases (1%), and carcinoma cases 03 (1%). (0.6 percent).

Conclusions: Cervical cytology by Pap-smear is an important method for early detection of pre-malignant and malignant cervix lesions. As a result, it is suggested that all vulnerable age groups get regular Pap-smear screenings.

Keywords: Pap-smear, cervical cancer and Bethesda system.

Introduction

Cervical cancer has emerged as a prominent cause of morbidity and mortality in emerging nations such as India. Nine out of thirteen population-based cancer registries in India have identified carcinoma cervix as the most frequent malignancy[1]. The Papaincolaou (Pap) smear was first used in 1941 and has since become the gold standard for detecting premalignant and cancerous cervix lesions. The present cytological terminology, known as "The Bethesda System," was developed by an expert council in 1988, despite the National Cancer Institute's disapproval[2-4]. Bethesda system 2014 was created for reporting cervical cytology results, and it provides unambiguous guidelines for clinical management of the patient. In most industrialised nations, the use of the Papaincolaou (Pap) method as a cervical cancer screening tool resulted in a reduction in cervical cancer[5-7]. Pap-smear cytology aids in the detection and assessment of cellular abnormalities in uterine cervical lesions. Among other tests, cyto-pathological examination of these smears has stood out due to its simplicity and cost effectiveness, both of which are important criteria of procedures suitable to mass screening programs[8,9].

Aims & objectives: Investigation of the cytological pattern of a cervical Papanicolaou smear in a Medical college using the Bethesda system

Materials and Methods

A retrospective investigation was carried out in the Department of Pathology.

Source of data: This research comprised female ranging in age from 20 to 80 years old and was done over a two-year period.

Pap-smears were collected and examined in the middle of the cycle to establish the test's reliability. Smears were obtained from the transformation zone and gently stroked and uniformly spread on a glass slide using Ayre's spatula. The stains were stabilised for around 30 minutes by dipping the glass slide in a Coplin jar containing isopropyl alcohol. Smears were stained using the fast Pap procedure after they had been fixed. The researchers looked over 300 Pap-smears in total. All smears were recorded using the Bethesda system of 2014, and each case was assigned a category using the Bethesda system of 2014. Atypical squamous cell of unknown significance (ASCUS), low grade intra-epithelial lesion (LSIL), high grade intra-epithelial lesion (HSIL), atypical glandular cells of unknown significance (AGUS), and other atypical cells not further described were the names given to all SIL. SCC, adenocarcinoma, and other malignancy not further described were among the malignant cases.

Results

A minimum of one percent of the cases were in the age range of 71 to 80 years. The age group 41-50 years had the most cases (38.33%), followed by the age group 31-40 years with 36.3 percent. With increasing age, the frequency of cytopathological abnormalities has risen steadily. In the 41-50 year period, it grew from 2% to 3%. (Table 1).

Table 1: Age wise distribution of total number of study subjects

Age group (years)	No. of cases	Percentage
21-30	21	7
31-40	109	36.33
41-50	115	38.33
51-60	33	11
61-70	19	6.33
71-80	03	1

According to the Bethesda method, 279 (93%) of the smears in our research were good. Unsatisfactory for evaluation were 21 (7%) smears, with 08 being hidden by blood, 05 by inflammation, 04 by blood and inflammation, and 04 due to low squamous cellularity. Epithelial cell abnormalities (squamous cell abnormalities: 30(10 percent) and glandular cell abnormalities: 02(0.6 percent) accounted for 10.6% of all cases, while the remaining 247 cases (82.3 percent) were classified as NILM. The most number of instances (n-247) falls into the NILM group, accounting for 82.3 percent of all cases. The cancer rate was discovered to be 0.6 percent. The percentage of study subjects with a precursor lesion (intra-epithelial lesion) was determined to be 4%. The rate of aberrant epithelial cells is 10.6%. (See Table 2)

Table 2: Findings of Pap-smear cytology

Detection	No. of cases	Percentage
Unsatisfactory for evaluation	21	7
NILM	247	82.33
ASCUS	16	5.33
LSIL	9	3
HSIL	3	1
SCC	2	0.6
AGCUS	2	0.6
Adenocarcinoma	0	0

The age group 41-50 years old had the highest frequency of epithelial cell abnormalities (both squamous and glandular) (Table 3). Other investigations have found similar rates of NILM, SIL, and invasive cancer. SIL rates range from 3% to 13% in various studies, while cancer incidence ranges from 0.1 percent to 6%. Our research found a SIL rate of 4% and a cancer incidence of 0.6 percent, which is comparable to other studies (Table 4).

Table 3: Age wise abnormal findings

Age Gp	No of cases	ASCUS	LSIL	HSIL	SCC	AGCUS	Adenocarcinoma	Total abnormal findings	%
21-30	20	0	0	0	0	0	0	0	0
31-40	109	2	2	0	0	0	0	4	1.33
41-50	117	11	3	1	0	0	0	15	5
51-60	33	2	3	1	0	1	0	7	2.33
61-70	19	1	1	1	1	1	0	5	1.66
71-80	2	0	0	0	1	0	0	1	0.33
Total	300	16	9	2	2	2	0	32	10.6

Discussion

The commonest cancer in female for the past two decades has been carcinoma cervix[10]. These cervical lesions grow over time and eventually become invasive, with 4 percent reaching the invasive stage by the end of one year, 11 percent by the end of three years, 22 percent by five years, and 30 percent by ten years[11]. It has a long latent period during which it can be diagnosed as a premalignant lesion that can be treated. Cervical cancer is commonest between the ages of 55 and 59 in India. In most industrialised nations, the use of the Papaincolaou (Pap) method as a cervical cancer screening tool resulted in a reduction in cervical cancer[12-15]. Pap-smear cytology aids in the detection and assessment of cellular abnormalities in uterine cervical lesions. Among other tests, cyto-pathological examination of these smears has stood out due to its simplicity and cost effectiveness, both of which are important criteria of procedures suitable to mass screening programs[16-18]. The highest number of epithelial cell abnormalities were seen in female aged 41-50 years, as reported by Benedet et al & In addition, Algotar et al. The average age was 39 in a research by Goyal et al.12. Premalignant and malignant lesions are more likely in female over 45 years old. TBS has been highly regarded by the pathology and clinical sectors since its establishment in 1988. Although there are numerous reasons for TBS's rapid acceptance, one of the most important is, without a doubt, the sound and deliberate foundation on which all of TBS's elements are built[19-22].

Conclusion

Cervical carcinomas are one of the commonest cancers in India. Cervical carcinoma incidence has decreased dramatically as a result of mass screening and education campaigns. Pap-smear aids in the early detection of premalignant and malignant cervix lesions. The Bethesda system for cervical cytology is a standardised and uniform procedure that provides a descriptive detection to help gynaecologists manage their study subjects. As a result, it is suggested that all vulnerable age groups get regular Pap-smear screenings.

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