Section: Pathology

Original Research Article

PROFILE OF PAP SMEAR CYTOLOGY AMONG WOMEN PRESENTING TO A TERTIARY CARE CENTRE IN SOUTH INDIA

Sivagami S[1], Mercy Joyston[1], Vishnupriya S[1], Krishnaveni A G[2], Rani K[3]

[1]Assistant Professor, Department of Pathology, Madurai Medical College, Madurai, Tamil Nadu, India
[2]Associate Professor, Department of Pathology, Madurai Medical College, Madurai, Tamil Nadu, India
[3]Professor and Head, Department of Pathology, Madurai Medical College, Madurai, Tamil Nadu, India

Received : 10/12/2024
Received in revised form : 05/02/2025
Accepted : 21/02/2025

Keywords:
Pap smear, Bethesda system, cervical cancer.

Corresponding Author:
Dr. Mercy Joyston,
Email: mercyswamidoss@gmail.com

DOI: 10.47009/jamp.2025.7.1.187

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2025; 7 (1); 953-956

Abstract

Background: Though preventable, cancer of the cervix remains the second most common cancer in females in India. The Government of India has formulated guidelines over the years for the effective prevention and early detection of cervical cancer. This study aims to determine the profile of Pap smear done in patients presenting to the Outpatient Department of a Tertiary care centre in South India. **Materials and Methods:** The cytological pattern of all Pap smears received in the Department of Pathology during the period January to December 2024 were retrospectively analysed. A total of 2647 smears were studied and correlated with age and presenting complaints of the patients. **Result:** Of the 2647 smears studied, 398 (15.04%) were unsatisfactory, 2159 (81.56%) were Negative for Intraepithelial Lesion or Malignancy of which 1108 were inflammatory smears and 36 were Atrophic and Epithelial lesion in 90 (3.4%). ASCUS accounted for 2.12% (56 smears), ASC H for 0.11% (3 smears), LSIL for 0.76% (20 smears), HSIL for 0.34% (9 smears) and Carcinoma for 0.08% (2 smears). After 21 years of age a gradual increase in abnormal lesions was observed, being highest in the 51 to 60 age group. **Conclusion:** Pap smear is a simple and cost-effective procedure to detect various lesions of the cervix. Regular screening within 3 years of beginning sexual activity up to the postmenopausal age group needs to be strongly advocated. This will bring down the morbidity and mortality due to cervical cancer.

INTRODUCTION

Cervical cancer is the fourth common cancer globally and the second most common in India.[1] It is the commonest cancer in rural parts of India though.[2] There is a pressing need to evaluate and strengthen the current screening programmes. Health education at the community level to improve awareness regarding early detection and treatment of cervical cancer is also needed. Patients still present in advanced stages with poor response to therapy and marked morbidity and mortality.

Precancerous changes of the cervix can be detected by a relatively simple procedure – the Papanicolaou test or Pap smear. This test was developed by the Greek physician – Georgios Papanikolaou in 1928. This was validated through clinical trials by the early 1940s. Since then, it has had a profound impact on women's health with a dramatic decline in mortality due to cervical cancer.[3]

In developing countries more awareness is needed, with regular screening to be implemented as per the guidelines. The WHO South - East Asia strategy to accelerate the elimination of cervical cancer carries a three-fold target for 2030 - 90% of girls to be vaccinated with HPV vaccine by 15 years of age, screening of 70% women by age 35 and again by age 45 and treatment of 90% of women detected with lesions (premalignant or malignant).[4]

This study was done to characterise the profile of Pap smear results among patients presenting to a tertiary care centre in South Tamil Nadu.

MATERIALS AND METHODS

This is a retrospective study conducted at a tertiary care centre in Madurai based on a review of laboratory records of Pap smears received in the Department of Pathology from January to December 2024. A total of 2662 smears were received of which 15 were excluded due to insufficient data.

ISSN (O): 2687-5365; ISSN (P): 2753-6556

Cervical smears were obtained by conventional method using the Ayre's spatula. The smears were immediately fixed in 95% ethyl alcohol. Papanicolaou staining was done and the smears reported as per Bethesda System for cervical cytology.

Data was analysed using Excel Sheet version 2414. The various lesions were correlated with age of the subjects and their presenting complaints.

RESULTS

Among the 2647 smears, 2159 (81.56%) cases were reported as Negative for intraepithelial lesion/Malignancy (NILM), 90 (3.4%) showed Epithelial abnormality, 398 (15.04%) were unsatisfactory smears. Of the NILM cases, 36 (1.36%) had atrophic smears, 1108 (41.86%) showed inflammatory smears and the remaining 1015 showed no specific changes. Atypical Squamous Cells of Undetermined Significance (ASCUS) was noted in 56 cases (2.12%), Atypical Squamous Cells – cannot exclude High Grade Squamous Intraepithelial Lesion (ASC-H) in 3 (0.11%), Low Grade Squamous Intraepithelial Lesion (LSIL) in 20 cases (0.76%), High Grade Squamous Intraepithelial Lesion (HSIL) in 9 cases (0.34%) and carcinoma in 2 cases (0.08%). [Table 1]

The smears were categorised according to the age group. Maximum number of patients screened belong to the age group 31 to 40 – 954 cases, followed by the 41 to 50 age group – 758 cases. [Table 2]

No epithelial cell abnormalities were noted in the under 20 age group. After 21 years of age there is a gradual increase in abnormal smears, with the proportion of epithelial cells abnormalities detected among the population screened, highest in the 51 to 60 age group. ASCUS was diagnosed in 10.29% of those screened, ASC H in 0.49%, LSIL in 3.92% and HSIL in 1.96%. After the age of 70 a decline in epithelial lesions is noted. [Table 3]

Pap smear was done as a screening procedure in patients presenting to the OPD with various complaints, the most common of which was leucorrhoea followed by abnormal uterine bleeding. Various other complaints include infertility, secondary amenorrhoea, abdominal pain and dysuria.

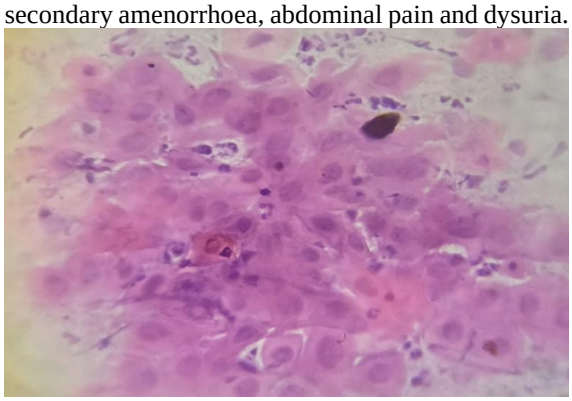

Figure 1: Atypical Squamous Cells of Undetermined Significance (ASCUS)

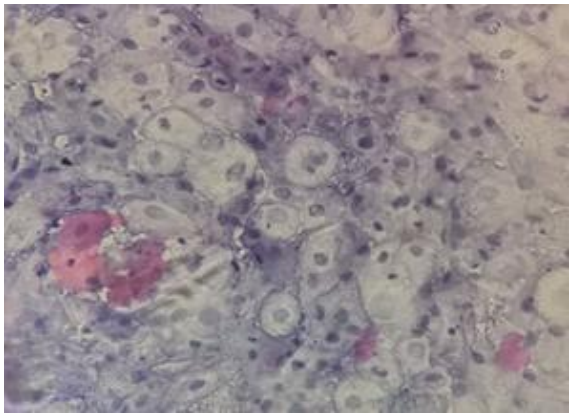

Figure 2: Low Grade Squamous Intraepithelial Lesion (LSIL)

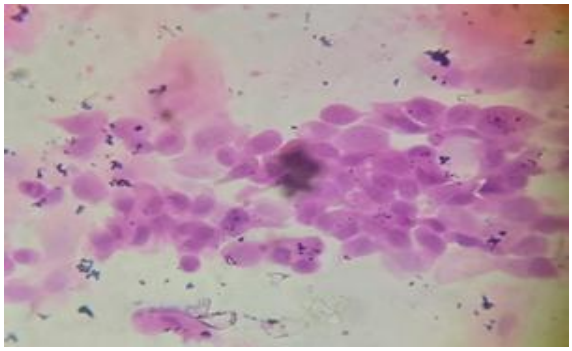

Figure 3: High Grade Squamous Intraepithelial Lesion (HSIL)

Table 1: Profile of Pap smear Diagnosis in 2024 (as per Bethesda System).

Diagnosis		Number of patients	Percentage
Unsatisfactory smear		398	15.04
NILM	Non specific	1015	38.35
	Inflammatory smear	1108	41.86
	Atrophic smear	36	1.36
Epithelial Abnormalities	ASCUS	56	2.12
	ASC - H	3	0.11
	LSIL	20	0.76
	HSIL	9	0.34
	Carcinoma	2	0.08
Total		2647	100

Table 2: Age wise distribution of participants

Age group	Number	Percentage
Under 20	39	1.47

ISSN (O): 2687-5365; ISSN (P): 2753-6556

21 to 30	618	23.35
31 to 40	954	36.04
41 to 50	758	28.64
51 to 60	204	7.71
61 to 70	57	2.15
Above 70	17	0.64
Total	2647	100

Table 3: Age wise distribution of Abnormal Pap smears

Age Group	ASCUS		ASC - H		LSIL		HSIL		Carcinoma		Total Screened
	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent	
Under 20	0	0	0	0	0	0	0	0	0	0	39
21 to 30	5	0.8	-	-	1	0.16	-	-	-	-	618
31 to 40	15	1.57	1	0.11	6	0.63	2	0.21	-	-	954
41 to 50	11	1.45	-	-	5	0.66	3	0.4	1	0.13	758
51 to 60	21	10.29	1	0.49	8	3.92	4	1.96	-	-	204
61 to 70	3	5.26	1	1.75	-	-	-	-	1	1.75	57
Above 70	1	5.88	-	-	-	-	-	-	-	-	17

Table 4: Comparison of distribution of abnormal pap smears (Percentage)

Epithelial Abnormality	Sachan et al	Lakshmi et al	Sharma et al	Present study
ASCUS	2.9%	2.5%	3.3%	2.12%
ASC H	-	-	0.8%	0.11%
LSIL	5.09%	7.5%	1.2%	0.76%
HSIL	0.48%	6%	0.4%	0.34%
Carcinoma	-	1%	0.2%	0.08%

Table 5: Mean age of Patients with Abnormal pap smears

Epithelial Abnormality	Rawat et al	Sharma et al	Present study
ASCUS	45	-	46.88
ASC H	54	59	50
LSIL	39.5	51	45.35
HSIL	51.5	50	49.56
Carcinoma	64.6	70	54

DISCUSSION

Carcinoma of the uterine cervix is potentially preventable. According to GLOBOCAN 2022 there were 127526 new cases in India which accounted for 17.7% of all cancers in women.[5] Our study involved 2647 subjects with ages ranging from 16 to 89. Abnormal smears were detected in 3.4%.

The study done by Singh et al,[6] in 2015 showed Epithelial cell abnormality in 108 cases (10.8%) and NILM in 846 cases (84.6%). Maraqa et al,[7] in their study involving 5529 cases in Jordan found abnormalities in 210 cases (3.8%). Sharma et al,[8] in their study in 2021 found Epithelial cell abnormality in 31 cases (6.9%) and NILM in 411 cases (91.3%). In our study we detected 90 abnormal smears (3.4%) and 2159 cases of NILM (81.56%).

In the study by Sachan et al,[9] in 2018 (Uttar Pradesh), ASCUS was found in 2.9% of those screened, LSIL in 5.09% and HSIL in 0.48%. Lakshmi et al,[10] found ASCUS in 2.5%, LSIL in 7.5%, HSIL in 6% and carcinoma in 1% in their study done in Andhra Pradesh (2016). Sharma et al8 reported ASCUS in 3.3%, AGUS in 0.6%, ASC H in 0.8%, LSIL in 1.2%, HSIL in 0.4% and Carcinoma in 0.2%. In our study we found ASCUS in 2.12%, ASC H in 0.11%, LSIL in 0.76%, HSIL in 0.34% and Carcinoma in 0.08%. [Table 4]

The study by Rawat et al,[11] in 2016 found the mean age of patients with ASCUS to be 45, ASC H, LSIL, HSIL and Carcinoma cervix were 54, 39.5, 51.5 and 64.6 years. The study by Sharma et al,[8] found the mean age of ASC H, LSIL, HSIL and Carcinoma cervix to be 59, 51, 50 and 70 years respectively. In our study the mean ages of patients with ASCUS, ASC H, LSIL, HSIL and Carcinoma cervix were 46.88, 50, 45.35, 49.56 and 54 years respectively. [Table 5]

CONCLUSION

Pap smear is a simple and cost-effective procedure to detect premalignant as well as non-neoplastic lesions of the uterine cervix. The general population needs to be educated to undergo regular screening within 3 years of beginning sexual activity. Screening needs to be extended to the postmenopausal age group as well, since the highest proportion of abnormal smears was noted in the age group of 51 to 60. More efforts need to be taken to implement the current recommended guidelines to screen the age group of 30 to 65 years every 5 to 10 years according to the resources available.[4] As the burden of disease is still high in India, early detection of epithelial abnormalities and subsequent treatment will reduce the morbidity and mortality due to cervical cancer in our population.

ISSN (O): 2687-5365; ISSN (P): 2753-6556

REFERENCES

1. Prarthna V. Bhardwaj, Renuka Dulala, Senthil Rajappa, Chandravathi Loke, Breast Cancer in India: Screening, Detection, and Management, Hematology/Oncology Clinics of North America, Volume 38, Issue 1, 2024, Pages 123-135
2. Meesha Chaturvedi, Krishnan Sathishkumar, Sudarshan Kondalli Lakshminarayana, Anita Nath, Priyanka Das, Prashant Mathur, Women cancers in India: Incidence, trends and their clinical extent from the National Cancer Registry Programme, Cancer Epidemiology, Volume 80, 2022, 102248
3. Avdulla CS, Tachirai N. George N. Papanicolaou (1883-1962): The Pioneer of Cytology and Early Cancer Detection. Cureus. 2024 Sep 9;16(9): e68999
4. Sharma J, Yennapu M, Priyanka Y. Screening Guidelines and Programs for Cervical Cancer Control in Countries of Different Economic Groups: A Narrative Review. Cureus. 2023 Jun 28;15(6):e41098. doi: 10.7759/cureus.41098. PMID: 37519623; PMCID: PMC10381098
5. Globocan: Cancer Today, International Agency for research on Cancer (2022) https://gco.iarc.who.int/media/globocan/factsheets/populations/356-india-fact-sheet.pdf
6. Singh K, Singh A. A Clinicopathological correlation of pap smear findings in gynecological cases: A retrospective study. Int J Sci Res. 2015;4(7):1645–7.
7. Maraqa B, Lataifeh I, Otay L, Badran O, Qutaiba Nouri Y, Issam I, Al Hussaini M. Prevalence of Abnormal Pap Smears: A Descriptive Study from a Cancer Center in a Low-Prevalence Community. Asian Pac J Cancer Prev. 2017 Nov 26;18(11):3117-3121. doi: 10.22034/APJCP.2017.18.11.3117. PMID: 29172288; PMCID: PMC5773800.
8. Honey Bhasker Sharma, Megha Bansal*, Nikhilesh Kumar, Monika Gupta Spectrum of Pap smear cytology in women presenting in a tertiary care center in north India-a two year study. IP Archives of Cytology and Histopathology Research 2021;6(1):7–11
9. Sachan R, Sachan PL, Singh M, Patel ML. A Study on Cervical Cancer Screening Using Pap Smear Test and Clinical Correlation. Asia-Pacific J Oncol Nurs. 2018;5(3):337–41. doi:10.4103/apjon.apjon_15_18
10. Lakshmi P, Gouri S. Study and Analysis of Two Hundred Cervical Pap smears in our Hospital. Int J Contemp Med Res. 2016;3(9):2787–90.
11. Rawat K, Rawat N, Mathur N, Mathur M, Chauhan N, Tinna R, et al. A study of cytological pattern of cervical Papanicolaou smears in western Rajasthan, India. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 2016;5(9):3186– 3190.

ISSN (O): 2687-5365; ISSN (P): 2753-6556