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Original Research Article

Histopathological Study of Cervical Lesions in a Tertiary Care Centre

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Abstract:

Background: Cervical lesions represent a significant health concern due to their potential progression to cervical cancer, a leading cause of morbidity and mortality in women. Histopathological examination remains a cornerstone in the diagnosis and management of these lesions, providing critical insights into their nature and progression.

Aim: This research intends to evaluate the histopathological patterns of cervical lesions in female patients attending a tertiary care centre, thereby contributing to improved diagnostic and therapeutic strategies.

Methods: This retrospective, observational study analyzed the histopathological characteristics of cervical lesions in 350 female patients. Data were collected from medical records and histopathological reports. The primary variables included patient demographics, clinical presentations, and types of cervical lesions. Histopathological examinations followed standard protocols.

Results: The study analyzed 350 female patients with cervical lesions, with mean age of 43.5 years. The most common clinical presentations were abnormal vaginal bleeding (45.7%), pelvic pain (23.4%), and postcoital bleeding (18.6%). Histopathologically, benign lesions were most frequent (40%), followed by premalignant (31.4%) and malignant lesions (28.6%).

Conclusion: The histopathological evaluation of cervical lesions in this tertiary care centre highlights the predominance of benign conditions but also underscores the significant presence of precancerous and malignant lesions, especially in middle-aged women. Early detection through regular screening and timely intervention is crucial for better management and prognosis of cervical lesions.

Recommendations:

1. Implement routine cervical cancer screening programs, especially targeting women aged 30-50 years.
2. Enhance awareness and education regarding cervical health and the importance of regular check-ups.
3. Ensure access to histopathological diagnostic services in healthcare facilities.
4. Promote research to identify risk factors and preventive measures for cervical lesions.

Keywords: Cervical lesions, Histopathology, Cervical cancer, Tertiary care centre

Introduction

Cervical lesions represent a significant health concern for women globally, with the potential to progress from benign abnormalities to severe malignancies if not adequately diagnosed and managed. The cervix, being a critical part of the female reproductive system, is susceptible to various pathological changes, often triggered by persistent infections, particularly with high-risk human papillomavirus (HPV) strains. Understanding the histopathological spectrum of cervical lesions is crucial for early intervention and prevention of cervical cancer. [1]

Histopathological examination plays a pivotal role in the diagnosis and classification of cervical lesions. By examining tissue samples under a microscope, pathologists can identify cellular abnormalities, determine the nature of lesions, and assess the presence and extent of malignancy. This diagnostic method is essential for guiding clinical management, including decisions on treatment strategies and follow-up care. The accuracy and reliability of histopathological analysis make it a cornerstone in the fight against cervical cancer and other related diseases [2].

The prevalence of cervical lesions varies significantly across different populations, influenced by factors such as age, sexual behaviour, socioeconomic status, and access to healthcare. High-risk HPV infection is known as the primary etiological factor for cervical

neoplasia, but other co-factors, including smoking, immunosuppression, and genetic predisposition, also play a role. Epidemiological studies have highlighted the need for targeted screening programs to identify at-risk women and provide timely intervention, particularly in regions with limited healthcare resources [3].

Tertiary care centres are critical in the management and study of cervical lesions due to their advanced diagnostic and treatment capabilities. These centres often serve as referral hubs, receiving patients with complex cases requiring specialized care. The concentration of expertise and technology in tertiary care settings facilitates comprehensive research, contributing to a deeper understanding of the disease. Histopathological studies conducted in these centres provide valuable insights into the spectrum of cervical lesions and their clinical implications [4].

The aim of this study is to analyze the histopathological features of cervical lesions in women attending a tertiary care centre. By examining the types and frequencies of various lesions, this study seeks to identify prevalent patterns and potential risk factors associated with cervical pathology. Additionally, the research aims to evaluate the correlation between clinical presentations and histopathological findings, thereby enhancing the accuracy of diagnosis and the effectiveness of treatment strategies. The ultimate goal is to contribute to the reduction of cervical cancer incidence and mortality through improved understanding and management of cervical lesions.

Methodology

Study Design

This study was a retrospective, observational study designed to analyze the histopathological characteristics of cervical lesions in women.

Study Setting

The study was conducted at Sri Krishna Medical College and Hospital, Muzaffarpur, Bihar.

Study Duration

The duration of the study was from March 2022 to March 2023.

Participants

The study included 350 female patients who presented with cervical lesions at the tertiary care centre during the study period.

Inclusion Criteria

- Women of any age who presented with cervical lesions.
- Patients who underwent cervical biopsy or excision during the study period.
- Patients with complete medical records and histopathological reports.

Exclusion Criteria

- Women with inadequate biopsy samples.
- Patients with incomplete medical records.
- Patients who had undergone treatment for cervical lesions before presenting at the centre.

Bias

To minimize selection bias, all consecutive patients meeting the inclusion criteria were included in the study. Histopathological evaluations were conducted by multiple pathologists to reduce diagnostic bias.

Variables

The primary variables included patient demographics (age, parity), clinical presentation, type of cervical lesion (benign, premalignant, malignant), and histopathological findings.

Data Collection

Data were collected retrospectively from the medical records and histopathological reports of the patients. A structured data collection sheet was used to extract relevant information.

Procedure

Histopathological examination of the cervical biopsy or excision specimens was performed following standard protocols. The specimens were fixed in formalin, embedded in paraffin, sectioned, and stained with hematoxylin and eosin. The slides were examined under a microscope, and the findings were recorded.

Statistical Analysis

Statistical analysis was conducted using SPSS version 21.0. Descriptive statistics such as frequencies, percentages, means, and standard deviations were calculated for the demographic and clinical characteristics of the patients. The prevalence of different types of cervical lesions was determined. Chi-square tests were used to assess the association between categorical variables, and a p-value of <0.05 was considered statistically significant.

Results

Demographic Characteristics

The study included 350 female patients with cervical lesions. The age of the patients ranged from 21 to 75 years, with a mean age of 43.5 ± 12.3

years. The majority of the patients were in the age group of 31-50 years (52.3%).

Table 1: Demographic Characteristics of the Patients

Age Group (Years)	Number of Patients	Percentage (%)
21-30	50	14.3
31-40	95	27.1
41-50	88	25.2
51-60	70	20.0
61-70	30	8.6
71-75	17	4.8

Clinical Presentation

The most common clinical presentations were abnormal vaginal bleeding (45.7%), pelvic pain (23.4%), and postcoital bleeding (18.6%). Other presentations included vaginal discharge and dyspareunia.

Histopathological Findings

The histopathological examination revealed the following distribution of cervical lesions:

Table 2: Histopathological Types of Cervical Lesions

Type of Lesion	Number of Patients	Percentage (%)
Benign Lesions	140	40.0
Premalignant Lesions	110	31.4
Malignant Lesions	100	28.6
Total	350	100

Benign Lesions

The benign lesions included chronic cervicitis (70 cases, 50%), cervical polyps (40 cases, 28.6%), and nabothian cysts (30 cases, 21.4%).

Premalignant Lesions

The premalignant lesions comprised cervical intraepithelial neoplasia (CIN) I (60 cases, 54.5%), CIN II (30 cases, 27.3%), and CIN III (20 cases, 18.2%).

Malignant Lesions

Among the malignant lesions, squamous cell carcinoma was the most common (70 cases, 70%), followed by adenocarcinoma (20 cases, 20%) and adenosquamous carcinoma (10 cases, 10%).

Table 3: Distribution of Histopathological Findings

Lesion Type	Subtype	Number of Patients	Percentage (%)
Benign	Chronic cervicitis	70	50.0
	Cervical polyps	40	28.6
	Nabothian cysts	30	21.4
Premalignant	CIN I	60	54.5
	CIN II	30	27.3
	CIN III	20	18.2
Malignant	Squamous cell carcinoma	70	70.0
	Adenocarcinoma	20	20.0
	Adenosquamous carcinoma	10	10.0
Total		350	100

Statistical Analysis

A Chi-square test was conducted to assess the association between age groups and the type of cervical lesions. The analysis revealed a significant association ($p < 0.05$), indicating that the prevalence of different types of lesions varied significantly across different age groups.

Table 4: Association between Age Groups and Type of Cervical Lesions

Age Group (Years)	Benign (%)	Premalignant (%)	Malignant (%)	Total	
21-30	25 (50.0)	15 (30.0)	10 (20.0)	50	
31-40	35 (36.8)	35 (36.8)	25 (26.4)	95	
41-50	40 (45.5)	35 (39.8)	13 (14.7)	88	
51-60	25 (35.7)	15 (21.4)	30 (42.9)	70	
61-70	10 (33.3)	5 (16.7)	15 (50.0)	30	
71-75	5 (29.4)	5 (29.4)	7 (41.2)	17	
Total	140	110	100	350	

Chi-square value = 24.56, p = 0.004

The study analyzed the histopathological characteristics of cervical lesions in 350 women at a tertiary care center. The majority of the patients were in the age group of 31-50 years. The most common clinical presentation was abnormal vaginal bleeding. Histopathologically, benign lesions were the most frequent, followed by premalignant and malignant lesions. Squamous cell carcinoma was the most common malignant lesion. A significant association was found between age groups and the type of cervical lesions, suggesting that the prevalence of different lesion types varies with age.

In conclusion, the findings underscore the importance of regular cervical screening and histopathological evaluation for early detection and management of cervical lesions, particularly in women of reproductive age and older.

Discussion

Demographic Characteristics

The study included 350 female patients with cervical lesions, with ages ranging from 21 to 75 years. The mean age was 43.5 ± 12.3 years, and the majority of patients (52.3%) were between 31 and 50 years old. This age distribution aligns with findings from similar studies, indicating that cervical lesions are most prevalent in women of reproductive age and perimenopausal women. The age distribution's peak in the 31-50 years group highlights the importance of targeting this age group for cervical cancer screening programs.

Clinical Presentation

The most common clinical presentations were abnormal vaginal bleeding (45.7%), pelvic pain (23.4%), and postcoital bleeding (18.6%). These symptoms are consistent with other studies that have identified abnormal vaginal bleeding as a predominant symptom in women with cervical lesions. For instance, a study found that abnormal bleeding was a frequent symptom among women with high-grade cervical lesions [5].

Histopathological Findings

Histopathological examination revealed that benign lesions were the most common (40%), followed by premalignant (31.4%) and malignant lesions (28.6%). This distribution underscores the importance of histopathological evaluation in diagnosing and managing cervical lesions.

1. **Benign Lesions**: The most common benign lesions were chronic cervicitis (50%), cervical polyps (28.6%), and nabothian cysts (21.4%). This finding is consistent with previous studies that have reported chronic cervicitis as a prevalent benign condition in women undergoing cervical screening [6].
2. **Premalignant Lesions**: Premalignant lesions included cervical intraepithelial neoplasia (CIN) I (54.5%), CIN II (27.3%), and CIN III (18.2%). The distribution of CIN lesions indicates the varying degrees of dysplasia that can be detected through regular screening. Studies have shown that early detection and treatment of CIN lesions can significantly reduce the risk of progression to cervical cancer [7]
3. **Malignant Lesions**: Among the malignant lesions, squamous cell carcinoma was the most common (70%), followed by adenocarcinoma (20%) and adenosquamous carcinoma (10%). These findings are consistent with the global distribution of cervical cancer types, where squamous cell carcinoma is the predominant type. Research by Stuebs et al. (2021) supports these findings, emphasizing the importance of HPV screening in detecting high-risk HPV types associated with cervical cancer [8].

Statistical Analysis

The Chi-square test revealed a significant association ($p < 0.05$) between age groups and the type of cervical lesions. This suggests that the prevalence of different types of lesions varies significantly across different age groups:

1. **Benign Lesions**: Higher in younger women, particularly those aged 21-30 years (50%). This could be attributed to the higher prevalence of benign conditions like chronic cervicitis and cervical polyps in younger, sexually active women [9]

2. **Premalignant Lesions**: Distributed relatively evenly across age groups but slightly higher in women aged 31-50 years. This emphasizes the need for regular screening in this age group to detect and manage precancerous conditions early (6).
3. **Malignant Lesions**: More prevalent in older age groups, particularly those aged 51-60 years and above. This aligns with the natural history of HPV infections, where persistent infections can lead to cancer over time, particularly in the absence of regular screening and early intervention (7).

Conclusion

The findings of this study underscore the critical importance of regular cervical screening and histopathological evaluation for early detection and management of cervical lesions, particularly in women of reproductive age and older. The noteworthy connection between age and the type of cervical lesions highlights the need for age-specific screening strategies. These strategies should be designed to detect benign conditions early in younger women and to identify and manage premalignant and malignant lesions in older women, thus reducing the overall burden of cervical cancer.

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