



HISTOMORPHOLOGICAL STUDY OF LESIONS OF UTERINE CERVIX WITH EMPHASIS ON HER-2/neu EXPRESSION IN PRE - MALIGNANT AND MALIGNANT CASES

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Abstract

Cervical cancer is a leading cause of cancer-related morbidity and mortality among women, particularly in developing countries. Histopathology remains the gold standard for diagnosis of cervical lesions; however, overlapping morphological features often pose diagnostic challenges. Human epidermal growth factor receptor 2 (HER-2/neu), a proto-oncogene implicated in several epithelial malignancies, may have prognostic and therapeutic significance in cervical neoplasia.

Keywords: Cervix, Squamous cell carcinoma, CIN, HER-2/neu, Immunohistochemistry

Introduction

Cervical cancer is a leading cause of cancer-related morbidity and mortality among women, particularly in developing countries. Histopathology remains the gold standard for diagnosis of cervical lesions; however, overlapping morphological features often pose diagnostic challenges. Human epidermal growth factor receptor 2 (HER-2/neu), a proto-oncogene implicated in several epithelial malignancies, may have prognostic and therapeutic significance in cervical neoplasia.

Purpose of study:

To evaluate the histomorphological spectrum of lesions of the uterine cervix and assess HER-2/neu expression in pre-malignant and malignant cases.

Methodology:

This prospective study was conducted in the Department of Pathology, Jawaharlal Nehru Medical College, Ajmer, from January 2023 to December

2024. A total of 180 cervical biopsy and hysterectomy specimens were included. Cases were classified into non-neoplastic, premalignant [CIN I-III], and malignant lesions [squamous cell carcinoma, adenocarcinoma]. Routine hematoxylin and eosin staining was performed, and immunohistochemistry for HER-2/neu was applied to premalignant and malignant lesions. HER-2/neu expression was graded according to ASCO/CAP 2014 guidelines and correlated with histological type and grade.

Results:

Of the 180 cases, non-neoplastic lesions accounted for 58.3%, premalignant lesions 19.4%, and malignant lesions 22.3%. The most affected age group was 41–50 years. Squamous cell carcinoma was the predominant malignancy, followed by adenocarcinoma. HER-2/neu positivity showed a stepwise increase with disease severity: 33% of CIN I cases showed 1+ expression, while 50% of CIN II/III

showed 2+ to 3+ expression. Among malignant cases, 63.58% of squamous cell carcinomas and 58.9% of adenocarcinomas demonstrated HER-2 positivity, often with incomplete or basolateral membranous staining. HER-2 expression significantly correlated with higher tumor grade, lymph node metastasis, and parametrial invasion ($p < 0.05$).

Conclusion:

Cervical cancer predominantly affects middle-aged, multiparous women, with squamous cell carcinoma being the most common malignancy. HER-2/neu expression increases with disease severity and may

serve as a valuable prognostic biomarker and potential therapeutic target in advanced cases.

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