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Immunohistochemical expression of laminin-5 in cervical intraepithelial neoplasia

P. Kohlberger,[a,*] Ch. Beneder,[a] R. Horvat,[b] S. Leodolter,[b,c] and G. Breitenecker[b]

[a] *Department of Gynecolgy and Obstetrics, Vienna University Medical School, Vienna, Austria*
[b] *Department of Clinical Pathology, Gynecopathologic Unit, Vienna University Medical School, Vienna, Austria*
[c] *Ludiwig Boltzmann Institute of Gynecology and Gynecologic Oncology, Vienna, Austria*

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Abstract

Objectives. Laminin-5 is an attachment protein for epithelial cells. Several studies of a variety of cancers have reported increased expression of laminin-5 in carcinoma in situ and invasive cancer. This study was designed to investigate the correlation between the grade of cervical intraepithelial neoplasia and the immunohistochemical expression of laminin-5 in the cytoplasm and in the basement membrane underlining dysplastic squamous cells.

Methods. We used immunohistochemical methods to stain paraffin-embedded sections of cervical cone biopsies with a monoclonal antibody specifically targeting the γ2-chain of human laminin-5 protein. The study sample included 175 slides: 7 normal cervical epithelium, 36 lesions of mild dysplasia, 50 lesions of moderate dysplasia, 81 lesions of severe dysplasia, and 1 invasive squamous cell carcinoma.

Results. We found a statistically significant correlation between the grade of cervical intraepithelial neoplasia and laminin-5 immunoreactivity in the cytoplasm ($P < 0.01$) and in the basement membrane ($P = 0.03$) by use of the Wilcoxon rank-sum test.

Conclusions. According to previously published reports we confirmed with a higher number of cases a correlation of laminin-5 expression in the cytoplasm and/or basement membrane and grade of dysplastic lesion in the cervical epithelium. This study warrants further investigations with special interest to follow-up to investigate whether laminin-5 is a marker to predict the risk of progression of cervical intraepithelial neoplasia lesions.

Keywords: Immunohistochemistry; CIN; Laminin-5

Introduction

Preinvasive lesions of the cervix uteri are frequent, especially in young women, with a peak in incidence between the age of 25 and 40 years [1]. The number of cervical intraepithelial neoplasia (CIN) is rising. In 1985, 657 new cases of CIN and 955 new cases of cervical carcinoma were reported in Austria; 13 years later, in 1998, 735 new cases of CIN were diagnosed and the rate of invasive disease dropped to 515 cases (Austrian Statistical Office).

The grades of CIN are defined as mild (CIN 1), moderate (CIN 2), and severe (CIN 3, including carcinoma in situ) [1]. It is suggested that approximately 12.2% of all CIN 3, when left untreated, develop into invasive cancer with a mean duration of the in situ stage of 13.3 years [2].

Treatment for CIN depends on the results of colposcopy and biopsy as well as on the patient's age, desire for fertility, and reliability for follow-up. Treatment options include local excision and/or conization. Surgical electrical loop excisions, LLETZ (large loop excision of the transformation zone), and loop electrical excision procedure have become the preferred treatment for CIN lesions [3].

A properly performed conization still has a complication rate of approximately 10%. It includes anesthetic risk and postoperative hemorrhage, adverse effects on fertility, increased preterm delivery, cervical stenosis, and sepsis. The complications depend on the vertical height and geometry of the excised specimen [1].

* Corresponding author. Department of Gyneclolgy and Obstetrics, Vienna University Medical School, Waehringer Guertel 18–20, A-1090 Vienna, Austria. Fax: +43-1-40400-2911.
E-mail address: petra.kohlberger@akh-wien.ac.at (P. Kohlberger).

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