

DOI <https://doi.org/10.30525/978-9934-26-226-5-24>

**CD34-POSITIVE CELL COUNTS
IN THE CERVIX IN IMMUNODEFICIENCY STATES**

**КІЛЬКІСТЬ CD34-ПОЗИТИВНИХ КЛІТИН
В ШИЙКІ МАТКИ ПРИ ІМУНОДЕФІЦИТНИХ СТАНАХ**

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Cervical pathology is widespread in the population, which is associated with low detection, imperfection of the medical system, sometimes with asymptomatic course or insignificant symptoms of the course of inflammatory and non-inflammatory processes in this area [1; 2, c. 1] despite real achievement in prevention of invasive carcinoma during last years. Although regular checkups and cytological screenings are designed to reduce morbidity and mortality rates among women, the problem of pathological processes in cervix is extremely acute today [3, c. 1]. The prevalence of this group of diseases is still high both in Ukraine and worldwide [2, c. 1].

Particular attention of medical personnel in terms of the complexity of the clinical course, diagnostic features, individual approach to treatment is paid to risk groups [4, c.2]. This group of diseases is characterized by the greatest variability and complexity of the course in women with immunosuppression [5; 6, c. 2]. At the same time, HIV-infected women and women suffering from alcoholism represent a global problem [7; 8, c. 2].

Materials and methods. For the study, sectional material was taken from 80 women of reproductive age from 20 to 40 years. All subjects were divided into 3 groups. The first group (25 women) included women with confirmed HIV infection without any data on concomitant alcoholism. In patients of the second group (25), only history and post-mortem signs of alcohol abuse were identified. In this group, alcohol abuse was confirmed both by history data (survey of relatives) and autopsy results (alcoholic cirrhosis of the liver as the main symptom). The control group comprised women (30) who died from diseases not related to alcohol abuse, reproductive disorders without concomitant HIV infection (who died as a result of accidents or incidents). The collected material was fixed in 10% neutral buffered formalin and then embedded in paraffin. At the next stage, 5 x 10-6 m thick sections were made from the prepared paraffin blocks. Sections were subsequently stained with hematoxylin and eosin. Immunohistochemical examination (IHC) was performed indirect immunoperoxidase reaction [11] with monoclonal antibodies (mAb) to CD34 (Thermo scientific, USA). The reaction was visualized using a set of UltraVision LP Detection System HRP Polymer & DAB Plus Chromogen (Thermo scientific, USA). Microscopic examination was carried out on an Olympus BX41 microscope with further morphometric examination using the Olympus DP-soft 3.12 software. The following indicators were determined: the thickness of the stratified squamous nonkeratinized epithelium (SSNE) in all groups of patients, the relative volumes of genital warts, expressed as a percentage. Assessment of the degree of infiltration of the mucosal lamina propria (MLP) by immunocompetent cells (lymphohistiocytes) using a semi-quantitative method from 0 to 3 points (0 – no, 1 – weak, 2 – moderate, 3 – severe infiltration). Semi quantitative assessment of the IHC-staining [12] was done using the following grading: 0 (up to 10% cells immunoreactive), +1 (>10% and up to 50% cells immunoreactive), +2 (>50% cells strongly immunoreactive). Statistical processing of the results obtained was performed using the methods of variation statistics. The correspondence of the distribution to the normal one was determined by the Shapiro-Wilk's test, which showed that the samples were close to the normal distribution. Statistical indicators are presented as $M \pm \sigma$, where M is the arithmetic mean, σ is the standard deviation, Student's

t-test. Correlation analysis was carried out using Spearman's rank correlation coefficient. The statistical difference between the studied parameters was considered significant at $p < 0.05$.

Results. The study yielded findings, indicating the changes of the cervix in both investigated groups. The thickness of the epithelial layer of the mucous membrane of the cervix was determined. HIV infection and alcohol abuse have pronounced pathological effects with cervical changes. The expression of CD34 is present in 96% of women with immunodeficiency mainly with strong reaction. It is statistically likely that it does not depend on such morphological indicators as thickness of the cervical epithelium, relative volumes of condyloma, degree of infiltration of the mucosal lamina propria by immunocompetent cells. The expression of CD34 has statistically close negative connection with cervical dysplasia severity ($r = -0,81$) and can be used for detection of early potential of tissual transformation in women with immunodeficiency.

References:

1. Banerjee D, Mittal S, Mandal R, Basu P. Screening technologies for cervical cancer: Overview. *Cytojournal*. 2022;19:23.
2. Polyvianna Y, Chumachenko D, Chumachenko T. Computer aided system of time series analysis methods for forecasting the epidemics outbreaks. 2019 15th International Conference on the Experience of Designing and Application of CAD Systems, CADSM 2019:1-4.
3. Obiri-Yeboah D, Akakpo PK, Mutocheluh M, et al. Epidemiology of cervical human papillomavirus (HPV) infection and squamous intraepithelial lesions (SIL) among a cohort of HIV-infected and uninfected Ghanaian women. *BMC Cancer*. 2017;17:688.
4. Chumachenko D, Chumachenko T. Intelligent Agent-Based Simulation of HIV Epidemic Process. *Adv Intell Sys Comput* 2020; 1020:175-188.
5. Lytvynenko M, Bocharova T, Zhelezniakova N, et al. Cervical transformation in alcohol abuse patients. *Georgian Med News*. 2017; 271:12-17.
6. Pelchen-Matthews A., Ryom L., Borges Á.H., et al. Aging and the evolution of comorbidities among HIV-positive individuals in a European cohort. *AIDS*. 2018;32:2405-2416.
7. Lytvynenko M, Bondarenko A, Gargin V. The effect of alcohol on ovarian state in HIV-infected women. *Azerbaijan Med J* 2021:61-68.
8. Shepherd L, Borges Á, Ledergerber B, et al. Infection-related and -unrelated malignancies, HIV and the aging population. *HIV Med*. 2016;17:590-600.