

**A.V.Samoilenko  
I.S.Shpon'ka  
A.E.Gorshkova  
O.V.Poslavska  
S.O.Karnaukh**

State institution  
“Dnipropetrovsk  
Medical Academy of  
the Healthcare  
Ministry of Ukraine”

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## **IMMUNOHISTOCHEMICAL INVESTIGATIONS OF APOPTOTIC AND INFLAMMATORY MARKERS IN PARODONTAL TISSUES OF PATIENTS WITH GENERALIZED PARODONTITIS**

**ABSTRACT. Background.** Apoptosis mechanisms should play an important role in the elimination and renewal of periodontal cells. Despite clarification of signaling cascade of apoptosis, their relationship with clinical manifestations during parodontal inflammation is almost completely unknown. **Objective.** To determine the immunohistochemical expression of apoptotic and inflammatory markers in marginal parodontal tissues in patients with chronic and progressive course of generalized parodontitis compared with a control group. **Methods.** According to clinical and morphological peculiarities of generalized parodontitis all samples were divided into 2 groups: the 1<sup>st</sup> of them included chronic course of disease, and the 2<sup>nd</sup> – progressive. Patients with intact parodontum constituted the control group. Parodontal tissues samples were studied using histological methods, cytoplasmic reaction with caspase-3 and intranuclear reaction with p21, p53, Bcl-2 and inflammatory COX-2 markers were examined. Calculations were carried out on one hundred of respective cells. These morphometric and immunohistochemical studies were subjected to statistical analysis using nonparametric indexes. **Results.** The course of progressive generalized periodontitis is characterized by more severe expression of inflammatory markers COX-2 and apoptotic markers caspase-3 and p21 as compared with the control group and chronic generalized periodontitis. As for antiapoptotic protein Bcl-2, a statistically significant difference was revealed only in comparison with the control group. Between two groups no significant difference was detected only in the expression levels of oncosuppressor p53 and antiapoptotic protein Bcl-2. **Conclusion.** Further investigations are needed to indicate the possibility to use caspase-3, p21 and COX-2 as markers of the flow activity of generalized parodontitis.

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✉ [savdsma@yandex.ua](mailto:savdsma@yandex.ua)

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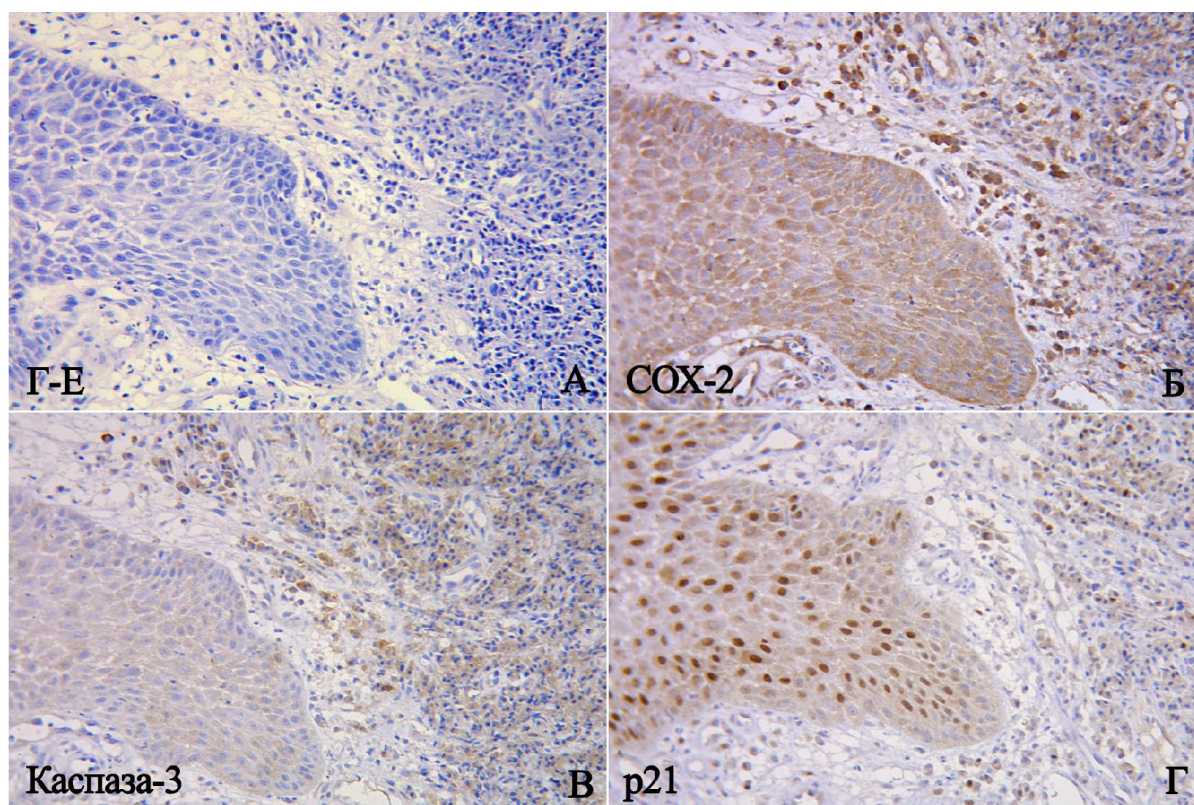


Fig. 1. Progressive generalized periodontitis. A. Hematoxylin & Eosin staining. Б. High-intensity (+3) cytoplasmic expression of COX-2 marker in the inflammatory infiltrate around the stratified squamous epithelium with positive reaction. В. Cytoplasmic expression (+1) of caspase-3 marker in more than 30% of inflammatory cells. Г. Mixed high-intensity cytoplasmic-intranuclear reaction (+3) with the p21 marker in the epithelium and inflammatory infiltrate. Immunohistochemical method, additional staining with Mayer's hematoxylin.  $\times 400$ .

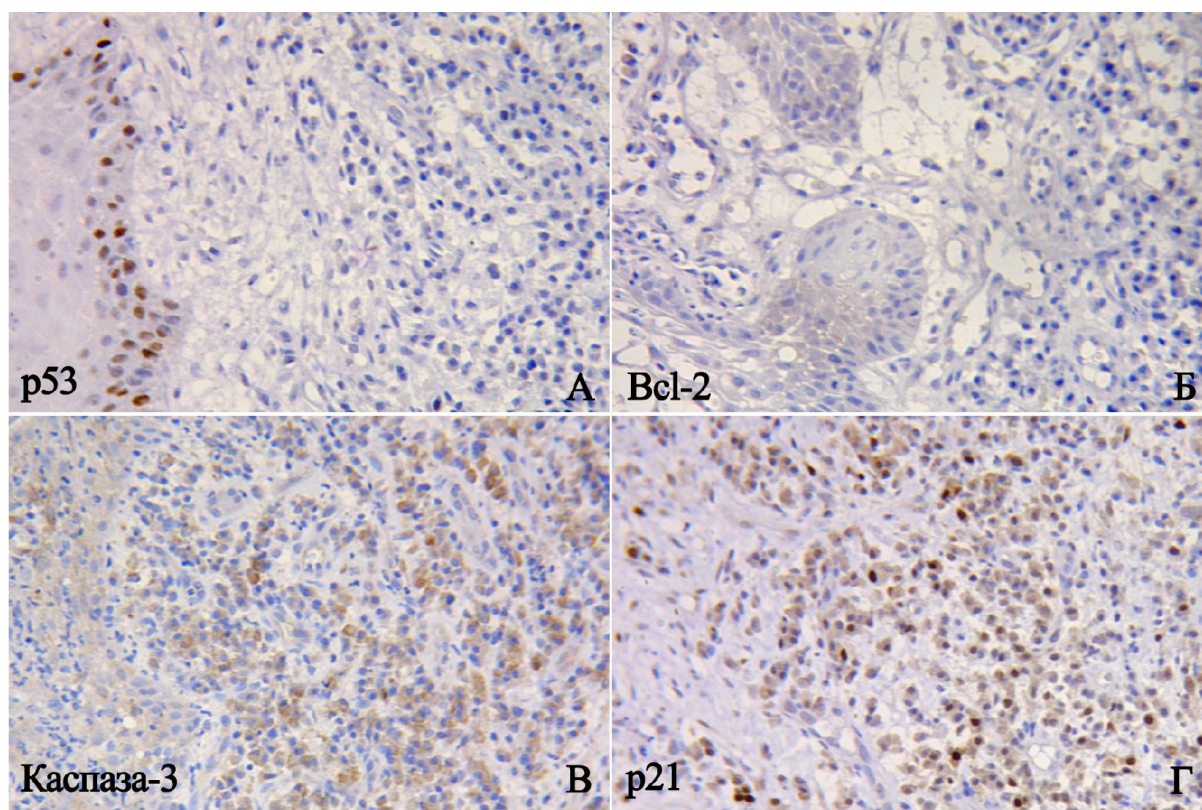


Fig. 2. Progressive generalized periodontitis. A. Intranuclear reaction (+1 grade) with p53 marker exclusively in the epithelium of marginal periodontium. Б. Negative reaction (0 grade) with Bcl-2 marker in the epithelium and inflammatory infiltrate of periodontium. B. Cytoplasmic reaction with caspase-3 marker in the inflammatory infiltrate and epithelial cords of stratified squamous epithelium (+1 grade). Г. Mixed high-intensity reaction with p21 marker in the interepithelial and stromal immune cells. Immunohistochemical method, additional staining with Mayer's hematoxylin.  $\times 400$ .

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