

## **The Role of the Receptors of the Kallikrein-Kinin System in the Prostate Proliferative Processes**

**Intoduction and Objectives:** It is known that the components of regulatory systems, in particular, the kallikrein-kinin system (KKS), play an important role in control of the cell morphogenesis, neoangiogenesis, malignant growth, and other pathological conditions, including prostate diseases. The main KKS effector - bradykinin - acts through the two types of B-kinin receptors, B1 and B2. Our aim was to study the role of bradykinin as the key KKS effector acting through the B1 and B2 receptors in the prostate tissue in cases of BPH and PCa.

**Materials and Methods:** We studied the material of multicore puncture biopsies in 15 males with PC (T2 - 6 patients,  $\geq$ T3 - 9 patients) (mean age  $69.7 \pm 7.52$ ), PSA -  $7.38 \pm 3.1$  ng/ml and 15 males with BPH (mean age  $66.7 \pm 8.53$ ). Immunohistochemical reactions were performed in a DakoAutostainer Plus automated robotic unit by the standard protocol. Primary antibodies to Bradykinin B1 Receptor (BDKRB1), rabbit polyclonal, 1:100 (Abcam), Bradykinin B2 Receptor (BDKRB2), rabbit polyclonal, 1:1000 (Abcam) were used.

**Results:** In the BPH cases, there was no expression of B1 in the gland cells. The specific reaction with anti-B1 antibodies in the gland epithelium occurred only in the malignant PIN acini and foci. The B1 receptor localization was intracytoplasmatic, in the apical part of the cells. Immunostaining with anti-B2 antibodies in the PCa group showed their expression mainly in the prostatic stroma, both in the PCa and the BPH cases. No change in the B2 expression was found in the stroma of high-grade cancers. Staining was seen in all cases of PCa, and its intensity was the same.

**Conclusions:** The B1 receptors predominate on the membrane of epitheliocytes in cases of PCa, while B2 is found in the stroma. This fact points out to a functionally active KKS in the PCa, the effector impact of which on the prostate tissue is achieved through different types of receptors. In the cases of BPH, there is no expression of B1 in the gland epithelium, while B2 is localized in the stroma and is easily identified. The nature of the B1 expression shows that it can be used as a PCa marker.