Angiotensin-Converting Enzyme and Kallikrein as a New Concept in the Study of Prostate Cancer

Introduction and Objectives: The role of renin-angiotensin system in the development of the prostate neoplastic transformation has attracted a lot of attention over the latest period. The low occurrence rate of prostate cancer (PCa) in hypertensive patients on angiosin-converting enzyme (ACE) and angiotensin II (AT_1) receptors blockers is known, and this fact points to the involvement of the renin-angiotensin system in the development of the PCa. The purpose of this paper was to analyze the disruption of the activity of ACE and Kallikrein (K) in the blood and prostate secretion in cases of PC.
Materials and Methods: The activity of K and ACE in the blood serum and prostate secretion in 18 patients (Group I) with PCa was studied (T2 - 11 patients, T ≥3 - 7 patients) (mean age 64.7±2.2), PSA - 8.4±3.1 ng/ml. The Group II included 20 males with BPH (mean age 65.3±1.6). The control group (Group III) consisted of 20 healthy males (mean age 40.3±1.3).
Results of Study: The activity of ACE and K in the blood serum of Group I patients was 49.7% ($p_a<0.001$) and 91.1% ($p_a<0.001$), respectively, and it was higher than in Group III patients. The ACE activity in PC cases was 90.9% ($p_b<0.001$), and it was higher compared to BPH cases. The K activity in Group 1 did not differ from that in Group II patients. The ACE and K activity in prostate secretion Group I patients were 56.7% and 364.6%, respectively, which was significantly higher compared to Group III patients ($p<0.001$). Comparative analysis of the specific nature of the proteolytic processes showed that K activity in the prostate secretion was lower 39.2% and it was higher, than in Group II ($p_b<0.001$), while ACE activity was 41.3%, which was lower than in the BPH cases ($p_b<0.001$).
Conclusions: Higher ACE and K activity in the blood and in the prostate secretion leads to accumulation of the peptide regulators of cell proliferation and angiogenesis: angiotensin II and bradykinin in PCa patients. The angiotensin and bradykinin receptors may be regarded in the future as components of a targeted therapy of PCa.