

The role of pituitary sex hormones in the pathogenesis and progression of lung cancer.

Summary

A number of literature reports indicate the important role of sex hormones (SexH) especially secreted by the pituitary gland in the development and progression of tumors originating in gonadal tissues, the genitourinary system and the mammary gland. The reason for undertaking the research was the lack of sufficient knowledge in the field of pathogenesis of particular subtypes of lung cancer.

The results obtained as part of the doctoral dissertation confirm that the pituitary hormones FSH, LH and prolactin play an important role in lung cancer. In addition, an increase in pituitary hormone levels may promote the development of cancer including lung cancer in the aging population. The obtained data proved that lung cancer cell lines and clinical material are characterized by strong expression of receptors for FSH, LH and prolactin. In order to verify the hypothesis about the participation of pituitary sex hormones in the pathogenesis of lung cancer, the doctoral dissertation presented related goals: a) assessment of potential role selected pituitary sex hormones for the migration and proliferation in normal lung stem cells (AT2, BASC); b) assessment of FSH, LH, PRL receptor expression in a 3D model (organoid); c) evaluation of expression FSH, LH, PRL receptor in selected lung cancer cell lines; d) assessment of the concentration of selected sex hormones in the serum of patients with lung cancer; e) assessment of expression FSH, LH, PRL receptor in cancerous tissues using a confocal microscope. The secondary objective of the study was: molecular analysis of miRNA profiles in the serum of patients with cancer compared to healthy group. Innovative research conducted as part of the doctoral dissertation for the first time evaluated the role of pituitary hormones and their receptors in the regulation of cancer cell biology in the lung cancer.

In the doctoral dissertation, all assumed goals were achieved. Lung cancer cells respond to stimulation of pituitary hormones, which play an important role in the progression of lung cancer and metastasis. The results demonstrated a statistically significant concentration of sex hormones in men, in the development of lung cancer and we can observed a decrease

concentration of hormones in the group of women diagnosed with lung cancer. However, we still needed more experimental work to assess whether for elevated pituitary sex hormone levels correlate with age predisposition to lung cancer. In addition, this research identified new diagnostic and prognostic markers in patients with lung cancer (miRNA).

The obtained data will allow to propose new therapeutic strategies based on modulation of intracellular signal transduction from receptors for pituitary sex hormones. They also proved the legitimacy of using miRNA molecules in future clinical therapies in the diagnosis and treatment of lung cancer.