

## **Invasive thyroid cancer: a relation with hormone reception**

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**Background:** The incidence of thyroid cancer (TC) worldwide has increased significantly over the past 3 decades [1]. There are 5 main histological types of thyroid cancers: papillary, follicular, poorly differentiated, anaplastic, and medullary TC, and only the latter arises from thyroid C cells [2]. Overall, around 15% of TC exhibit extra-thyroid spread but the rate is much higher in specific subgroups. Invasive growth, particularly invasion posteriorly, carries greater morbidity and mortality than anterior spread. Gender bias is well known in the incidence of TC and one of possible reasons of the phenomenon are sex steroids. Sex steroids exert many of their functions through intracellular receptors. There is some evidence about their role in TC progression and invasion. Even though the role of estradiol is known in thyroid cancers, only limited information is available on the role of androgens. Previous studies showed that ER $\alpha$  positivity, ER $\beta$  negativity, and AR expression are associated with a more aggressive phenotype of thyroid cancer [3].

**Target:** The aim of the study was to investigate the expression of hormone receptors in patients with invasive thyroid cancer and patients with non-invasive thyroid cancer.

**Materials and methods:** 98 patients with thyroid pathology without any clinically expressed co-morbidities were enrolled in the study. They received therapy in the Department of Surgical Oncology of the Cancer Research Institute of Tomsk National Research Medical Center. The expression level of AR, ERs, ER $\beta$ , PR, Brn-3 $\alpha$ , TRIM16, VHL were quantified by RT-PCR. The current research plan on human thyroid tissues was carried out in accordance with the Helsinki Declaration (2000) of the World Medical Association, and was approved by Institutional ethical committee for research in humans.

**Results:** It was found that the level of Brn-3 $\alpha$  is 98 times higher, and the level of AR mRNA is 8,6 times higher with invasion. At the same time, the level of ER $\beta$  is 6,1 times higher with extra-thyroid invasion. It was found that Brn-3 $\alpha$  is able to activate the expression of anti-apoptotic proteins Bcl-2 and Bcl-x, which promotes the protection of cells from apoptosis

**Conclusion:** Nuclear factor Brn-3 $\alpha$  modulating expression of steroid hormones play an important role in the development of thyroid tumors. It was found that the level of AR expression is associated with invasion and consequently, with more aggressive phenotype of thyroid cancer.

## **References**

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