Serum Galectin-3 in papillary thyroid cancer: Preliminary results.

Andra Caragheorgheopol, Sorina Schipor, Dana Manda, Ana-Maria Stefănescu, D Ioachim, C Badiu
"Cl.Furunned" National Institute of Endocrinology, Bucharest, ROMANIA

Background
Thyroid cancer, the most common endocrine malignancy, appears to have a genetic and epigenetic determination. Numerous studies have focused on genes expression in differentiated thyroid cancer. Increased gene expression for galactoside-binding soluble-3 protein, which codes for galectin-3 (Gal-3) was reported, but there are only a few reports demonstrating the correspondence between up-regulation of the gene and the serum levels of Gal-3. There are several advantages in providing a test for screening, diagnosis and follow-up based on a serum marker analysis (e.g. minimal invasiveness).

Objective
We aimed to evaluate the potential overexpression of Gal-3 in sera from patients with confirmed diagnosis of papillary thyroid carcinoma (PTC).

Patients and methods
We retrospectively investigated serum Gal-3 in 40 patients referred to the surgical department for thyroidectomy. Sera were collected before surgery. We quantified Gal-3 in sera of 40 patients (mean age 48.79±14.15 years): 32 women (82.5%) and 7 men (17.5%). Patients were divided in 4 groups, based on the histopathological stage: nodular goiter, PTC1, PTC2, PTC3/4. Gal-3 was measured by ELISA (Abcam, UK); sensitivity 0.12 ng/ml, CV intra-assay 6.4%; CV inter-assay 11.4%. The study was approved by Ethics Committee of the Institute.

Results
31 patients showed different PTC stages at histopathological exam, as follows: 10 PTC1, 10 PTC2 and 11 PTC3/4, respectively; 9 patients were diagnosed with benign nodular goiter. (Figure 1)

We found a significant difference between overall cancers and those with benign thyroid tumors (median Gal-3 – 8.427 ng/ml vs. 4.402 ng/ml, p=0.019), (Figure 2). There were also significant differences between PTC3/4 and nodular goiter (median Gal-3 – 9.069 ng/ml vs. 4.402 ng/ml, p=0.0097), and between PTC1 and nodular goiter, respectively (median Gal-3 - 8.751 ng/ml vs. 4.402 ng/ml, p=0.047).

Conclusions
Our results showed a significant difference between serum Gal-3 levels in PTC patients and those with benign pathology.
Our preliminary data showed no association of serum Gal-3 with tumor aggressiveness.
Serum Gal-3 might be considered as an early circulating tumor marker in thyroid cancer.

References