SERUM GALECTINS ARE INCREASED IN PATIENTS WITH GRAVES’ DISEASE HYPERTHYROIDISM

A Ramos-Levi\textsuperscript{1}, A Serrano\textsuperscript{1}, M Sampedro-Núñez\textsuperscript{1}, A Vicuña\textsuperscript{1}, A Rodríguez-Muñoz\textsuperscript{1}, R Martínez\textsuperscript{1}, H de la Fuente\textsuperscript{2}, M Marazuela\textsuperscript{1}

\textsuperscript{1}Department of Endocrinology and Nutrition and \textsuperscript{2}Department of Clinical Immunology; Hospital Universitario de la Princesa, Instituto de Investigación Sanitaria Princesa, Universidad Autónoma de Madrid, SPAIN.

INTRODUCTION

Patients with autoimmune thyroid disease (AITD) exhibit aberrant immune-regulatory mechanisms. Galectins (Gal) are a family of glycan-binding proteins, which have been involved in immune regulation. However, the association of Gal with AITD remains unknown. In this study, we evaluated serum Gal-1 and Gal-9 in patients with AITD.

MATERIALS AND METHODS

We studied peripheral blood samples from 31 patients with Graves’ disease (GD) (14 with untreated hyperthyroidism, 9 euthyroid with treatment, 8 with iatrogenic hypothyroidism), 26 Hashimoto’s thyroiditis (HT) (20 hypothyroid, 6 euthyroid with treatment), 12 non-GD hyperthyroid patients (NG) and 24 healthy controls were studied.

Serum levels of free thyroxine (FT4), TSH, thyroid antibodies (Ab) (anti-thyroglobulin, TgAb, anti-thyroid peroxidase (TPOAb), and TSH receptor antibodies, TSHRaB), Gal-1 and Gal-9 were measured on the same day. FT4 was measured by radioimmunoassay (RIA); TSH, Tg-Ab, TPO-Ab and TSHRaB by immunoradiometric assays; Gal-1 and Gal-9 by ELISA.

Patients were grouped according to clinical diagnosis and thyroidal status.

RESULTS

Serum levels of Gal-1 (ng/mL) (figure 1A) and Gal-9 (pg/mL) (figure 1B) were significantly increased in GD (3.756 and 8.582, respectively), HT (3.085, 9.188) and NG (2.822, 8.983), in comparison to controls (1.508, 7.323), \( p<0.05 \). No significant differences in Gal levels were found between the first three groups.

Patients with hyperthyroidism (both GD and NG) had higher Gal-9 levels than euthyroid AITD patients (figure 2), although there were no differences in Gal-1. In fact, in GD, we observed a direct correlation between Gal-9 and FT4 (\( r=0.517, p=0.006 \) ) (figure 3A), and an inverse correlation between Gal-9 and TSH (\( r=-0.478, p=0.007 \) ) (figure 3B).

We did not find an association between Gal-9 and Ab levels in either group of AITD, or with the presence of Graves’ orbitopathy in patients with GD. Conversely, an association between Gal-1 and TPO-Ab levels was found in HT (\( r=-0.512, p=0.038 \)). Antithyroid treatment reduced Gal-1 levels in patients with GD (figure 4).

CONCLUSIONS

Galectins may be involved in the severity and pathogenesis of AITD, and could potentially be used as a diagnostic and therapeutic marker.

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