

CLINICAL SPECIFICATIONS

THYROGLOBULIN

Function:

Thyroglobulin (Tg) is a glycoprotein formed by two identical subunits. Tg is synthesized in thyrocytes and released into thyroid follicles where it is most abundant. Tg plays the main role in coupling of iodinated tyrosine residues to form hormones, triiodothyronine (T3) and thyroxine (T4), through its specific sites. In order to release these hormones, the thyroid gland has to reabsorb the Tg droplets from the follicular lumen into follicular cells. A small fraction of Tg (around 100 mcg) is released from thyroid on a daily basis.

Antibodies Appear:

Autoimmune Thyroid Disease^{1, 2, 3}
 Hashimoto's Thyroiditis^{1, 2, 3}
 Graves' Disease^{1, 2}

Known Cross-Reactions: Thyroid peroxidase,⁴ heat shock protein,⁵ Latex hevein⁶

Clinical Significance:

Autoimmunity occurs when antibodies against Thyroglobulin cause gradual destruction of follicles in the thyroid gland, and decrease assimilation of thyroid hormones into the cells. Elevated antibodies to Tg are often associated with a hyperthyroid condition called Graves' Disease, the most common cause of enlarged thyroid glands and with Hashimoto's thyroiditis, a hypothyroid condition with occasional bouts of hyperthyroidism.^{1, 2, 3}

References:

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2. Muixí, et al. Thyroglobulin peptides associate in vivo to HLA-DR in autoimmune thyroid glands. *J Immunol*, 2008; 181:795-807.
3. Saboori, et al. Peptides of human thyroglobulin reactive with sera of patients with autoimmune thyroid disease. *J Immunol*, 1999; 163:6244-6250.
4. Thrasyvoulides and Lymberi. Antibodies cross-reacting with thyroglobulin and thyroid peroxidase are induced by immunization of rabbits with an immunogenic thyroglobulin 20mer peptide. *Clin Exp Immuno*, 2004; 138(3):423-429.
5. Gammazza, et al. Elevated blood Hsp60, its structural similarities and cross-reactivity with thyroid molecules, and its presence on the plasma membrane of oncocytes point to the chaperonin as an immunopathogenic factor in Hashimoto's thyroiditis. *Cell Stress Chaperones*, 2014; 19(3):343-353.
6. Kharrazian, et al. Immunological reactivity using monoclonal and polyclonal antibodies of autoimmune thyroid target sites with dietary proteins. *J Thyroid Res*, 2017; 2017:4354723.