



CPAL

Central Pennsylvania Alliance Laboratory

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Quantitative Determination of Anti-thyroid Peroxidase Antibodies (Anti-TPO Ab) and Anti-Thyroid Antibodies will be offered

Normal thyroid tissue expresses three principal antigens: TSH receptor, thyroglobulin, and thyroid peroxidase. In autoimmune disorders

affecting thyroid function, autoantibodies are produced against one or more of these three antigens.

According to the National Academy of Clinical Biochemistry Standards of Laboratory Practice for the diagnosis and monitoring of thyroid disease, anti-thyroid peroxidase antibodies (anti-TPO Abs) have emerged as the most generally useful marker for autoimmune thyroid disease. These autoantibodies were historically referred to as anti-microsomal antibodies. The major microsomal membrane component was subsequently identified as the thyroid peroxidase enzyme. This enzyme catalyzes iodination of tyrosine residues within the thyroglobulin molecule in the biosynthetic pathway leading to the production of thyroid hormones.

In place of the less well-defined microsomal antigen used in hemagglutination assays, highly purified preparations of TPO antigen are used in today's immunoassays. Results for the new anti-TPO Abs are reported in terms of a World Health Organization preparation and expressed in U/L instead of titers. The new assay removes the subjectivity inherent in agglutination assays.

The normal reference interval for TPO Ab assays remains controversial. When very sensitive methods are employed, TPO Abs are detected in healthy persons with normal thyroid function; the biological significance of low levels of TPO Abs is not clear. They may be normal variant false positives, or reflect true underlying thyroid autoimmunity. Our method is quantitative and has a normal reference interval of less than 3 IU/mL. In a recent study comparing the quantitative anti-TPO results with the anti-microsomal antibody titer results, the concordance was 49 samples or 98%. The discordant sample had an anti-TPO result of 15 IU/mL repeatedly and an anti-microsomal antibody titer of 1:1600, repeatedly. The anti-microsomal antibody test probably represents a false positive result because of the possibility of cross-reaction with anti-TG antibodies, if present in high concentration.

In Hashimoto's thyroiditis, anti-TPO Abs are found in virtually all cases. Elevated levels are also found in 85% of Grave's disease.

The new anti-thyroglobulin (anti-TG) test is a quantitative test with a normal reference interval less than 40 IU/mL. In a recent study comparing the quantitative anti-TG results with the qualitative anti-TG titer results, the concordance was 100% in 34 samples.

These tests will replace the current titer tests and will be available on May 1, 2000.

The previous thyroid antibodies tests will no longer be available at CPAL after May 1, 2000.

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For questions about this or other information, call Central Pennsylvania Alliance Laboratory at 1-888-480-1422.