Tissue transglutaminase antibodies

Anti-tTG IgA and IgG (atTg) are antibodies to tissue transglutaminase. Tissue transglutaminase is directly related to the pathogenesis of some diseases (celiac disease) and has been described as the endomysium's own chemical substrate. Tissue transglutaminase (transglutaminase II isoenzyme, TG2 - EC 2.3.2.13), is a transferase, and is also known as protein-glutamine γ-glutamyltransferase. It is a Ca^{2+} dependent enzyme catalyzing the deamination of glutamine to glutamate and the intramolecular binding of glutamine to another primary amine, e.g., lysine, which results in the aggregation of glutamine peptides. The determination of antibodies to tissue transglutaminase (atTG) therefore also has a very high diagnostic efficiency, similar to antibodies against endomysium (sensitivity is 87-97% and specificity is 88-98%).

The determination of atTG is performed by the classical ELISA method, which is a technique more available for routine diagnostics than immunofluorescence detection of anti-endomysium antibodies (EmA).

Unlike EmA, atTG antibodies can be found as IgA and IgG, which is important for patients with selective IgA deficiency. Older kits used guinea pig antigens. Newer kits use tissue transglutaminase isolated from human cells, human erythrocytes, or recombinant tTG isolated from E. coli. The reference values differ for individual kits with the upper limit of the physiological range usually being 10–15 IU / l for IgA antibodies (some kits also define a so-called *gray-zone* in the range of 10-20 IU / l). Determination of atTG antibodies with human recombinant antigen shows lower false positivity than guinea pig antigen methods. Recent studies compare IgA and IgG antibodies and POCT methodologies for the determination of atTG antibodies.

The determination of atTG antibodies in the IgA class is recommended as a basic screening test for the diagnosis of celiac disease.

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Source

- With the permission of the author, taken from KOCNA, Petr. *GastroLab: MiniEncyclopedia of laboratory methods in gastroenterology* [online]. © 2002. Last revision 2011-01-08, [cit. 2011-03-04]. < http://www1.lf1.cuni.cz/~kocna/glab/glency1.htm >.

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