

Determination of anti-deamidated gliadin/anti-tissue transglutaminase antibodies in patients with anti-gliadin and anti-cow's milk antibodies



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INTRODUCTION

Celiac disease (CD) is an autoimmune enteropathy caused by high gluten sensitivity of affected individuals (approx. 1% of population¹). The most common manifestations are chronic diarrhoea, fatigue, abdominal pain, weight loss, anemia, osteoporosis and others. Serological, histological and genetic tests are used for its laboratory diagnostics. Common serological tests include determination of IgG and IgA antibodies against:

tissue transglutaminase – aTTA, aTTG
 endomysium – aEMA, aEMG
 gliadin – aGA, aGG
 deamidated gliadin/deamidated gliadin peptides – aDGA, aDGG

Another, relatively common enteropathy (up to 6% in children and 0,5% in adults²) with symptoms similar to those of CD is cow's milk intolerance with presence of anti-cow's milk IgG and/or IgA antibodies (aCMG, aCMG).

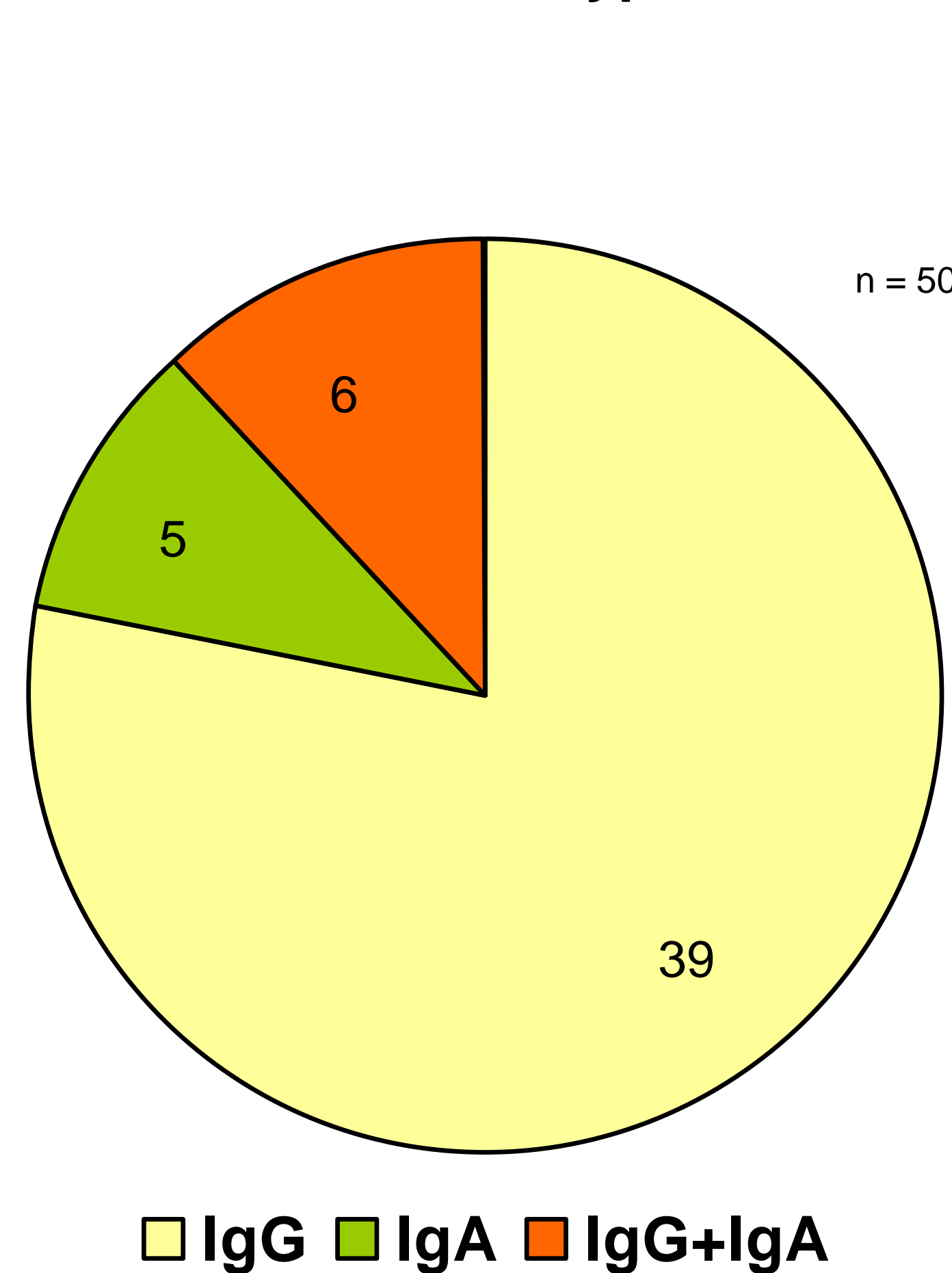
Presence of both aG and aCM is not uncommon and is probably the result of increased gut's mucosa permeability caused by inflammation. Therefore in a patient with a disease causing anti-gliadin antibodies production (e.g. celiac disease) aCM antibodies and *vice versa*, in a patient with cow's milk intolerance presence of aG antibodies can be often detected. Determination of aDG antibodies could be an useful tool to distinguish between CD and non-CD states (e.g. cow's milk intolerance), since its better performance than aG tests that is even comparable to aTT antibodies assay³. In addition, as a aDG IgG+IgA screening test that can be also used in IgA-deficient patients its cost is remarkably lower when compared to the usual aTTA and aEMA (often tested together with aGG, aGA) combination. Even better performance and costs reduction can be achieved with aDG+aTT IgG+IgA screening test.

RESULTS

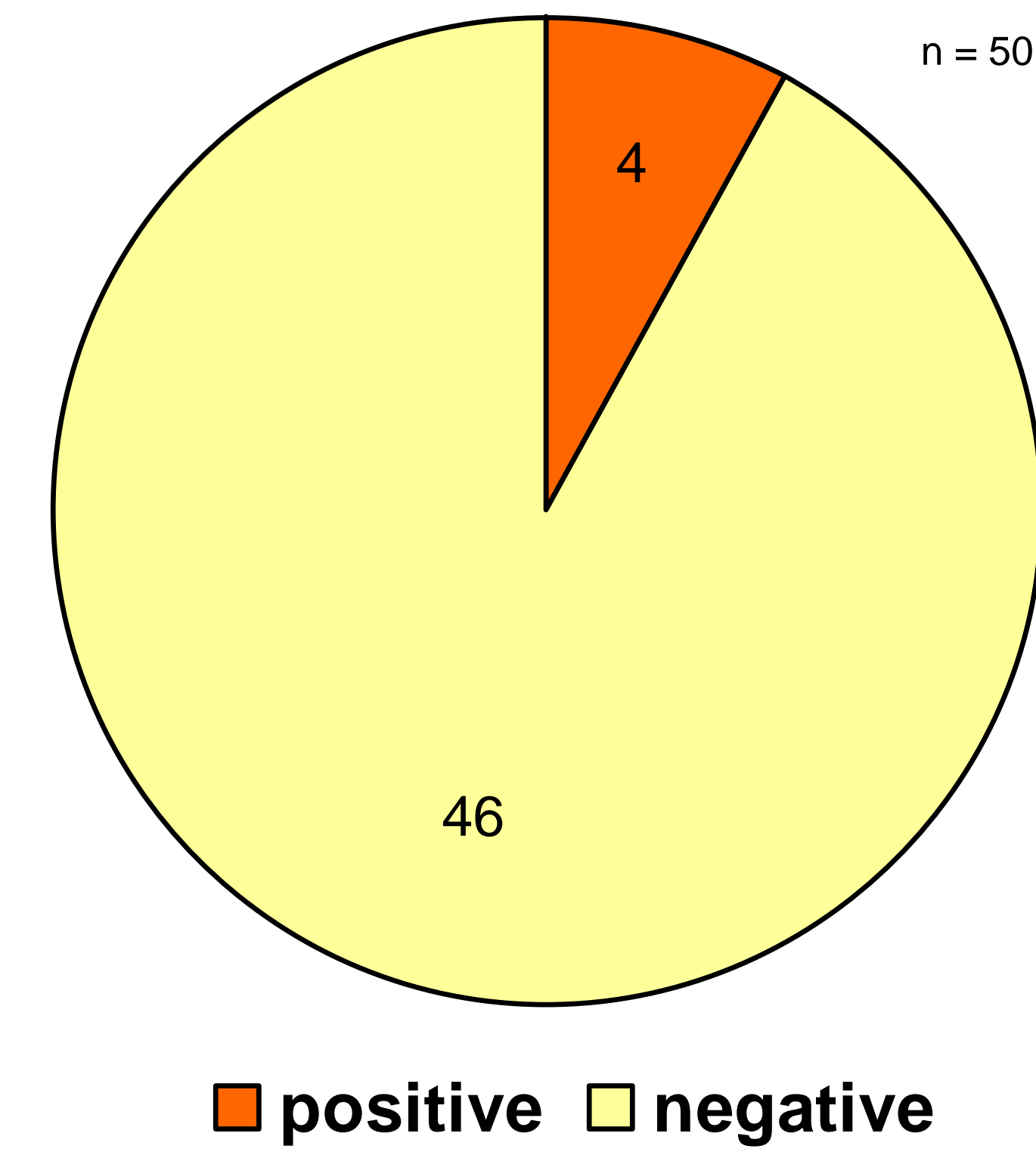
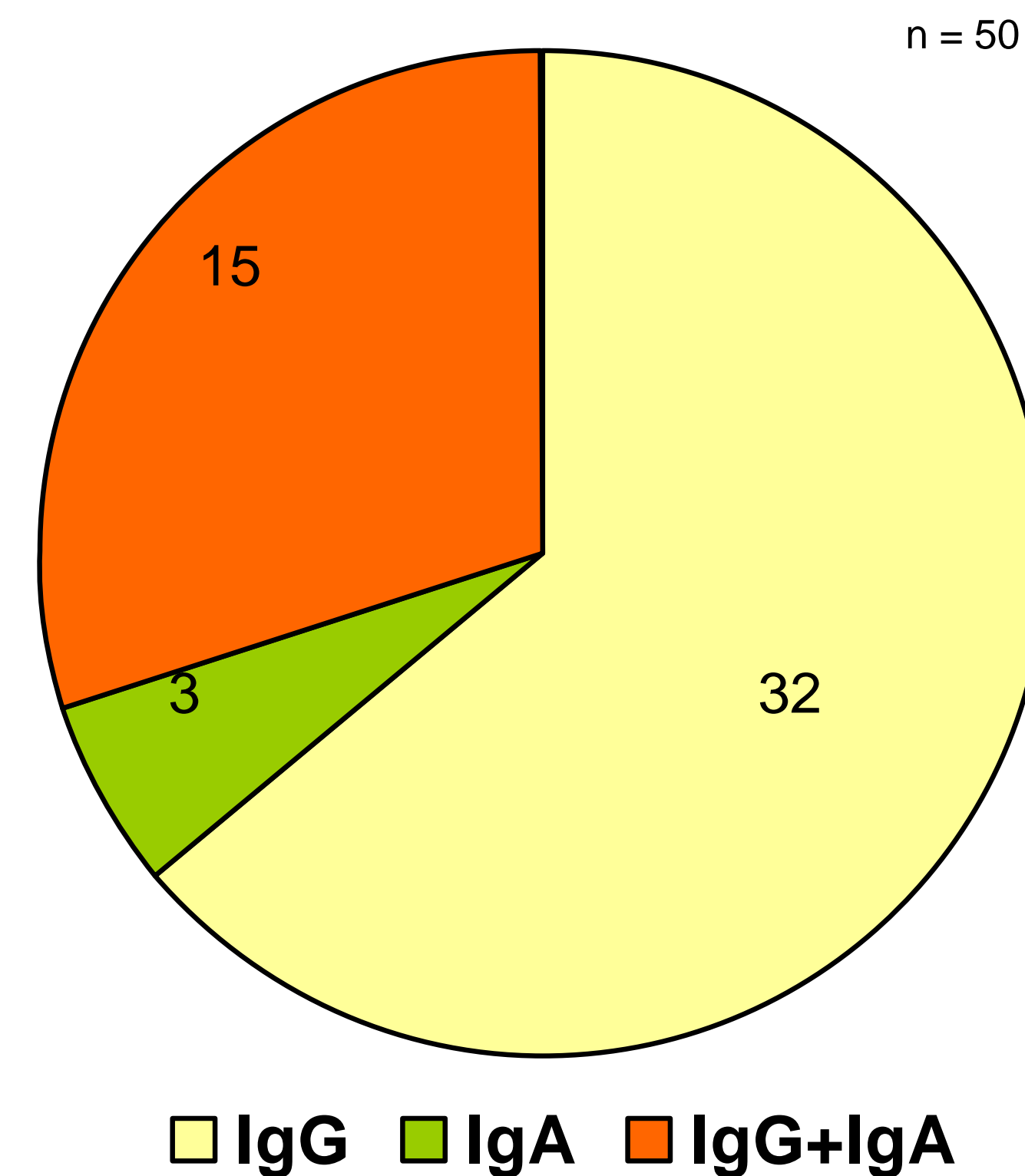
In this work a group of 50 patients with various immunological disorders different from CD with aGG/A and aCMG/A both present was tested for aDGG+A and aDG+aTT IgG+IgA antibodies (ELISA kits used: aGG, aGA – Orgentec; aCMG, aCMA – TestLine, aDG IgG+IgA, aDG+aTT IgG+IgA – INOVA diagnostics).

Distribution of anti-cow's milk antibodies isotypes

Distribution of anti-gliadin antibodies isotypes



Screening tests results anti-DG IgG+IgA, anti-TTG+anti-DG IgG+IgA



Anti cow's milk and anti-gliadin antibodies were mainly present in the IgG isotype. Both screening tests – aDG IgG+IgA; aTT+aDG IgG+IgA – gave the same results – negative in 46 cases. Therefore, both of them might indicate that the presence of aGG and/or aGA antibodies could have a cause different from celiac disease, e.g. cow's milk intolerance. In addition, celiac disease could be excluded as the probable diagnosis without the need of further or even repeated testing for aTT and aEM antibodies.

CONCLUSION

The results indicate that using a suitable screening test – aDG IgG+IgA or aTT+aDG IgG+IgA – information similar to aTTA+EMA (ev. together with aTTG, aEMG, aGG, aGA) can be obtained, with the advantage of covering IgA-deficient individuals and a significantly lower total cost. We can assume that, when screened positive, production of cow's milk antibodies might be only secondary to celiac disease and therefore absolute elimination of cow's milk and its products from patient's diet is not necessary. And *vice versa*, when screened negative, production of anti-gliadin antibodies might be secondary to another cause, e.g. cow's milk intolerance.

1. Fasano A. et al., Prevalence of celiac disease in at-risk and not-at-risk groups in the United States: a large multicenter study, Arch Intern Med. 2003 Feb 10;163(3):286-92.
 2. Crittenden RG., Bennett LE., Cow's milk allergy: a complex disorder, J Am Coll Nutr. 2005 Dec;24(6 Suppl):582S-91S.
 3. Vermeersch P. et al., Diagnostic performance of IgG anti-deamidated gliadin peptide antibody assays is comparable to IgA anti-TTG in celiac disease, Clin Chim Acta. 2010 Jul 4;411(13-14):931-5. Epub 2010 Feb 19.

