

Level 1

Blood Tests in Celiac Disease

KEY POINTS:

- Blood tests are useful to diagnose celiac disease (CD). They can also give doctors an idea of how a patient with CD is doing after diagnosis.

What blood tests are used to diagnose CD?

There are two modern blood tests for CD:

- 1) Tissue transglutaminase IgA antibody level (commonly known as "tTG")
- 2) Deamidated Gliadin Peptide IgA/IgG antibody level (commonly known as "DGP")

The Endomysial Antibody test (EMA) is an earlier version of the tTG test.

The anti-gliadin antibodies are older, less accurate tests. They are rarely useful at all these days and in general should not be ordered.^{1, 2}

Is there a blood test to detect CD in a person on a gluten-free diet (GFD)?

No. There is no simple and accurate blood test for this situation.³

Can blood tests indicate if someone with CD is following a GFD?

A drop in the tTG or DGP tests after 3-6 months on a GFD is a good way to monitor if someone is carefully following the GFD. It should go along with an improvement in symptoms. Currently, no blood test is as good as being evaluated by an experienced dietitian.^{3, 4}

Are there any other tests that may be useful to monitor a person with CD?

Often people with CD have low vitamin and mineral levels at diagnosis. Doctors and dietitians will monitor and treat these levels to be sure they return to normal. Iron, vitamin D, folate, vitamin B12, zinc and sometimes vitamin B6 are commonly low in people with CD.⁵⁻⁷

Sometimes, people with CD are tested for diseases that are more commonly seen along with CD. For example: thyroid disease⁸ and liver disease.⁹

TAKE HOME POINTS:

1. tTG and DGP antibody tests are the main blood tests to help diagnose and monitor CD.
2. Anti-gliadin antibodies are no longer used to diagnose CD.
3. Several blood tests are used to screen and follow people with CD for other diseases and vitamin and mineral levels.
4. There is no good blood test to confirm adherence to the GFD.
5. Evaluation by an experienced dietitian is the best way to monitor if someone is carefully following the GFD.

References:

1. Rubio-Tapia A, Hill ID, Kelly CP, Calderwood AH, Murray JA, ACG Clinical Guidelines: Diagnosis and Management of celiac disease. 2013, Am J Gastroenterol 108:656-676.
2. Leffler DA, Schuppan D. Update on serologic testing in celiac disease. Am J Gastroenterol. 2010 Dec;105(12):2520-4.
3. Kaukinen K , Sulkanen S , Maki M et al. IgA-class transglutaminase antibodies in evaluating the efficacy of gluten-free diet in coeliac disease. 2002. Eur J Gastroenterol Hepatol ;14 :311 – 5.
4. Leffler DA, Dennis M, Edwards George JB, Jamma S, Magge S, Cook EF, Schuppan D, Kelly CP. A simple validated gluten-free diet adherence survey for adults with celiac disease. Clin Gastroenterol Hepatol. 2009. May;7(5):530-6.
5. Tikkakoski S, Savilahti E, Kolho KL . Undiagnosed coeliac disease and nutritional deficiencies in adults screened in primary health care. 2007. Scand J Gastroenterol ;42 :60 – 5.
6. Hallert C, Grant C, Grehn S et al. Evidence of poor vitamin status in coeliac patients on a gluten-free diet for 10 years. 2002. Aliment Pharmacol Ther 16:1333 – 9.
7. Wierdsma NJ, van Bokhorst-de van der Schueren MA, Berkenpas M, et al. Vitamin and mineral deficiencies are highly prevalent in newly diagnosed celiac disease patients. Nutrients 2013;5:3975–3992.
8. Metso S, Hyytiä-Ilmonen H, Kaukinen K, Huhtala H, Jaatinen P, Salmi J, Taurio J, Collin P Gluten-free diet and autoimmune thyroiditis in patients with celiac disease. A prospective controlled study Scand J Gastroenterol. 2012 Jan;47(1):43-8.

9. Casella G, Antonelli E, Di Bella C, Villanacci V, Fanini L, Baldini V, Bassotti G. Prevalence and causes of abnormal liver function in patients with coeliac disease. *Liver Int.* 2013 Aug;33(7):1128-31

Revision Date: 3/24/2016

Author: Javier A. Villafuerte Gálvez, Abhijeet Yadav, MD

Editors: Melinda Dennis, MS, RD, LDN and Daniel Leffler, MD