



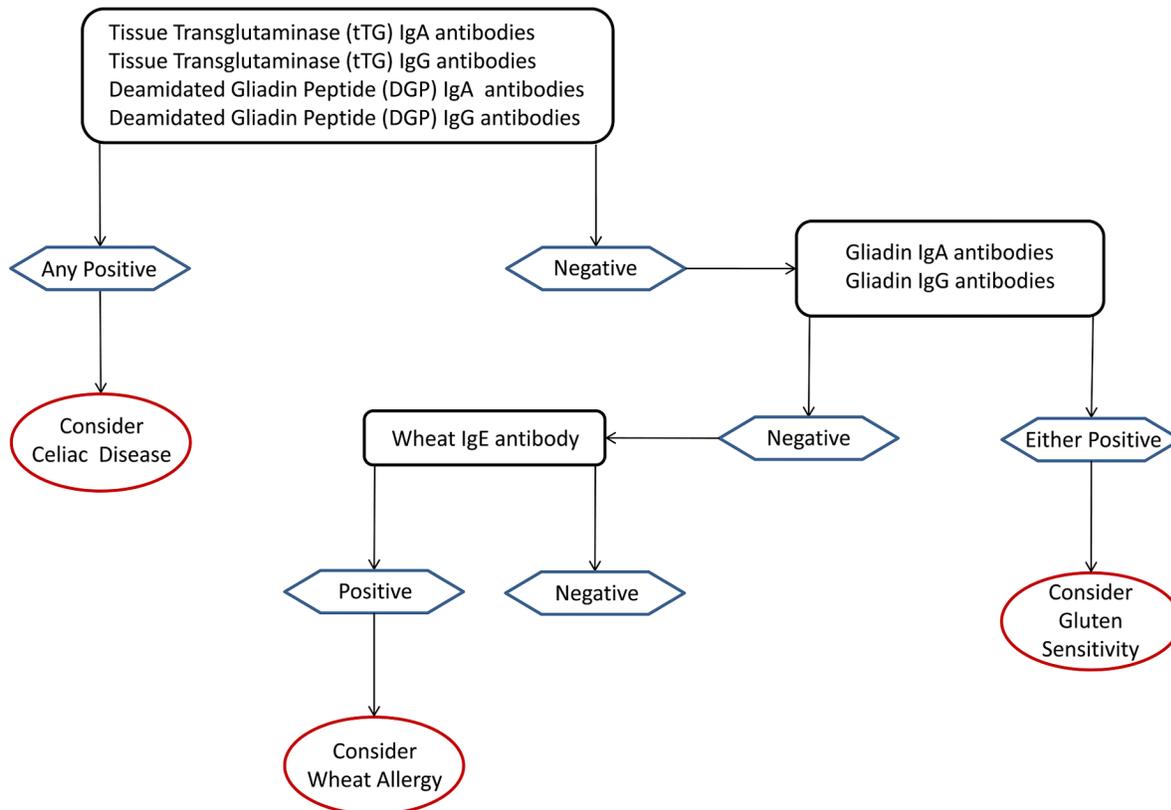
LAB #: B000000-0000-0
 PATIENT: Sample Patient
 ID: P0000000000
 SEX: Female
 DOB: AGE: 8

CLIENT #: 12345
 DOCTOR:
 Doctor's Data, Inc.
 3755 Illinois Ave.
 St. Charles, IL 60174 U.S.A.

Celiac & Gluten Sensitivity; serum

ANTIBODIES							
	RESULT/UNIT	REFERENCE INTERVAL	NEG	WEAK POS	POSITIVE		
Tissue Transglutaminase (tTG) IgA	141 U	< 20.0	[Bar chart showing result in POSITIVE zone]				
Tissue Transglutaminase (tTG) IgG	17.2 U	< 20.0	[Bar chart showing result in NEG zone]				
Deamidated Gliadin Peptide (DGP) IgA	< 5.2 U	< 20.0	[Bar chart showing result in NEG zone]				
Deamidated Gliadin Peptide (DGP) IgG	32.1 U	< 20.0	[Bar chart showing result in POSITIVE zone]				
Gliadin IgA	14.0 U	< 20.0	[Bar chart showing result in NEG zone]				
Gliadin IgG	86.0 U	< 20.0	[Bar chart showing result in POSITIVE zone]				
Wheat IgE	0.16 IU/mL	< 0.08	[Bar chart showing result in WEAK POS zone]				
			PERCENTILE				
			2.5 th	16 th	50 th	84 th	97.5 th
Immunoglobulin A (IgA)	126 mg/dL	35- 300	[Bar chart showing result in WEAK POS zone]				

Celiac Disease/Gluten Sensitivity/Wheat Allergy Cascade



SPECIMEN DATA

Comments:

Date Collected: 06/09/2015
 Date Received: 06/11/2015 <dl: less than detection limit
 Date Completed: 06/17/2015
 Method: Chemiluminescent, Immunoassay

Introduction

Celiac disease (CD) is one of the most common causes of chronic malabsorption and may contribute to a wide variety of chronic conditions including autoimmune disorders and nutritional deficiencies. Celiac disease remains underdiagnosed, as the condition is often asymptomatic for years.

Antibody tests that help diagnose CD and Non-Celiac Gluten sensitivity (NCGS) measure the patient's immune response to gluten exposure; the tests will only be diagnostically accurate if the patient is on a gluten-inclusive diet.

Evaluation of antibodies (tissue transglutaminase and deamidated gliadin peptide) in CD is based on detection of IgA class immunoglobulins. However the incidence of selective IgA deficiency is higher in CD, therefore this test also evaluates the corresponding IgG antibodies.

Patients diagnosed with CD must remain on a gluten-free diet for life and avoid wheat, rye, barley, and other foods that contain gluten and gluten related proteins. A complete list of foods containing wheat may be found at www.doctorsdata.com under "Hidden Sources of Ingredients".

The Doctor's Data Comprehensive Stool Analysis would include all of these tests plus additional biomarkers of digestive health and gastrointestinal function.

References:

American Association for Clinical Chemistry (2011) Celiac Disease Tests <http://labtestsonline.org/> accessed 15 May 2014.

Rubio-Tapia, Alberto; Hill, Ivor D; Kelly, Ciarán P; Calderwood, Audrey H; Murray, Joseph A (2013) ACG clinical guidelines: diagnosis and management of celiac disease. *The American journal of Gastroenterology* vol. 108 (5) p. 656-76; quiz 677.

Sapone, Anna; Lammers, Karen; Casolaro, Vincenzo; Cammarota, Marcella; Giuliano, Maria et al. (2011) Divergence of gut permeability and mucosal immune gene expression in two gluten-associated conditions: celiac disease and gluten sensitivity. *BMC Medicine* vol. 9 (1) p. 23.

Mothes, Thomas. (2007) Deamidated gliadin peptides as targets for Celiac disease-specific antibodies. *Advances in Clinical Chemistry* vol.44 p. 44.

Deamidated Gliadin Peptide (DGP) Antibody High

The serum level of anti-deamidated gliadin peptide (DGP) IgA, IgG or both is higher than expected. An elevated level of DGP IgA or IgG is indicative of Celiac disease.

Celiac disease (CD) is associated with a variety of autoantibodies, including tissue transglutaminases (tTG), and DGP; these are considered the most sensitive and specific blood tests for CD. Antibody responses to DGP show high specificity and parallel tTG responses in CD. The higher the level of anti-DGP IgA or IgG is, the greater the likelihood of a true positive result. For patients with selective total IgA deficiency and in those under age 2, DGP IgA will not likely be elevated and conclusions should be based upon the DGP IgG results.

These test results alone are not diagnostic for Celiac disease. The results should be considered in conjunction with the patient's symptoms, immune status, diet, genetic predisposition and medical history.

References:

American Association for Clinical Chemistry (2011) Celiac Disease Tests <http://labtestsonline.org/> accessed 15 May 2014.

Ankelo, M; Kleimola, V; Simell, S; Simell, O; Knip, M et al. (2007) Comparative Usefulness of Deamidated Gliadin Antibodies in the Diagnosis of Celiac Disease Antibody responses to deamidated gliadin peptide show high specificity and parallel antibodies to tissue transglutaminase in developing celiac disease. *Clinical and experimental immunology* vol. 150 (2) p. 285-93.

Parizade, Miriam; Bujanover, Yoram; Weiss, Batya; Nachmias, Vered; Shainberg, Bracha (2009) Performance of serology assays for diagnosing celiac disease in a clinical setting. *Clinical and vaccine immunology : CVI* vol. 16 (11) p. 1576-82.

Rubio-Tapia, Alberto; Hill, Ivor D; Kelly, Ciarán P; Calderwood, Audrey H; Murray, Joseph A (2013) ACG clinical guidelines: diagnosis and management of celiac disease. *The American journal of gastroenterology* vol. 108 (5) p. 656-76; quiz 677.

Vermeersch, Pieter; Geboes, Karel; Mariën, Godelieve; Hoffman, Ilse; Hiele, Martin et al. (2010) Diagnostic performance of IgG anti-deamidated gliadin peptide antibody assays is comparable to IgA anti-tTG in celiac disease. *Clinica chimica acta; international journal of clinical chemistry* vol. 411 (13-14) p. 931-5.

Wang, Ning; Truedsson, Lennart; Elvin, Kerstin; Andersson, Bengt A; Rönnelid, Johan et al. (2014) Serological assessment for celiac disease in IgA deficient adults. *PloS one* vol. 9 (4) p. e93180.

Gliadin Antibody High

The serum level of anti-gliadin antibodies (AGA) IgA, IgG or both is higher than expected. An elevation in either IgA or IgG may indicate gluten sensitivity.

Gluten sensitivity is defined as a gluten reaction that is independent of the IgE reactions of wheat allergy and autoantibody reactions of Celiac disease. In at least 50% of cases, elevated IgA and IgG AGA may be the only serological biomarker in cases of dermatitis herpetiformis or gluten ataxia. Studies have shown that patients with autism, Multiple Sclerosis or schizophrenia are more likely to have elevated IgA AGA levels and that those more likely to have adverse responses to dietary gluten.

Whole purified gliadin that contains the alpha, omega, beta and gamma isoforms is used in the assay.

A negative AGA IgA result does not exclude a possibility of gluten-sensitivity in patients who have selective IgA deficiency, or have been following a gluten-free diet because antibody levels decrease over time.

References:

American Association for Clinical Chemistry (2011) Celiac Disease Tests <http://labtestsonline.org/> accessed 15 May 2014.

Nelsen, David A. Jr., M.D., M.S., (2002) Gluten-Sensitive Enteropathy (Celiac Disease): More Common Than You Think. *Am Fam Physician*. 2002 Dec 15;66(12):2259-2266.

Pietzak, Michelle (2012) Celiac Disease, Wheat Allergy, and Gluten Sensitivity: When Gluten Free Is Not a Fad. *JPEN J Parenter Enteral Nutr* vol. 36 (1_suppl): p. 68S-75S.

Sapone, Anna; Lammers, Karen; Casolaro, Vincenzo; Cammarota, Marcella; Giuliano, Maria et al. (2011) Divergence of gut permeability and mucosal immune gene expression in two gluten-associated conditions: celiac disease and gluten sensitivity. *BMC Medicine* vol. 9 (1) p. 23.

Rubio-Tapia, Alberto; Hill, Ivor D; Kelly, Ciarán P; Calderwood, Audrey H; Murray, Joseph A (2013) ACG clinical guidelines: diagnosis and management of celiac disease. *The American journal of gastroenterology* vol. 108 (5) p. 656-76; quiz 677.

Tissue Transglutaminase Antibody High

The serum level of anti-tissue transglutaminase (tTG) IgA, IgG or both is higher than expected. An elevated tTG IgA or IgG is indicative of Celiac disease (CD). tTG IgA is the preferred screening test for detection of CD in patients 2 years or older. The tTG IgA test is the most sensitive and specific blood test for CD; the higher the titer of the test, the greater the likelihood of a true pathological autoimmune response. The autoimmune response results in inflammation of portions of the small intestine and damage to the small intestinal mucosa (including villous atrophy).

The tTG IgA test may also be used to monitor a patient with Celiac disease. tTG IgA antibody levels will return to normal when gluten and gluten related proteins are completely removed from the diet; the test may thus also help monitor the efficacy of intervention. Patients with Type 1 diabetes, Hashimoto's thyroiditis or autoimmune liver conditions may also have increased tTG IgA antibodies.

IgG for tTG is the preferred test for children less than 2 years of age, and individuals who have very low levels of total IgA or selective IgA deficiency. The higher the level of tTG IgG the greater the likelihood of a true positive result. The tTG IgG test may also be used to monitor a patient with CD. tTG IgG antibody levels are expected to return to normal when gluten is removed from the diet. Research indicates that, for Celiac IgA deficient adults, IgG antibodies may decrease more slowly, despite adherence to a gluten-free diet. Refer to the anti-gliadin antibody levels to confirm the presence or absence of gluten in the patient's diet.

These test results alone are not diagnostic for Celiac disease. The results should be considered in conjunction with the patient's symptoms, immune status, diet, genetic predisposition and medical history.

References:

American Association for Clinical Chemistry (2011) Celiac Disease Tests <http://labtestsonline.org/> accessed 15 May 2014.

Parizade, Miriam; Bujanover, Yoram; Weiss, Batya; Nachmias, Vered; Shainberg, Bracha (2009) Performance of serology assays for diagnosing celiac disease in a clinical setting. *Clinical and vaccine immunology : CVI* vol. 16 (11) p. 1576-82.

Rubio-Tapia, Alberto; Hill, Ivor D; Kelly, Ciarán P; Calderwood, Audrey H; Murray, Joseph A (2013) ACG clinical guidelines: diagnosis and management of celiac disease. *The American journal of gastroenterology*. vol. 108 (5) p. 656-76; quiz 677.

Wheat IgE High

The serum level of anti-wheat immunoglobulin subclass E (IgE) is higher than expected and indicates an allergic sensitivity to wheat.

Immunoglobulin subclass E (IgE) antibodies are used to diagnose type I hypersensitivity reactions to foods. IgE responses are known as "immediate" or anaphylactic responses. Direct exposure to the basophils and mast cells in the GI tract lining is usually required to trigger a food allergy reaction, although there are reports of reactions to inhaled foods. Not all reactions are mediated through IgE; though the likelihood of an IgE-mediated clinical reaction often increases with the level of specific IgE. Evidence of sensitization to a particular allergen (positive test result) is not always synonymous with clinical sensitivity.

References:

Siles, Roxanna I. MD and Hsieh, Fred H., MD (2013) Allergy blood testing: A practical guide for clinicians. Cleveland Clinic Journal of Medicine, Dec 2013, 80 (12).