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Study and Diagnose of Gluten Intolerance

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Abstract: he prevalence of the celiac disease is different, for example in Italy 1 in 250 people suffer from celiac disease, Ireland 1 to 300, in USA 1 in 133 Americans. Recent studies have shown that the disease may be more common in Africa, South America and Asia. Celiac disease affects people in different ways. Signs may be in the digestive system or in other parts of the body. Since this damage caused by our body's immune system, the disease is classified as an immune disease. However, it is considered a disease of worst absorbed because nutrients are not absorbed. The disease is also known as celiac disease or no tropical celiac disease, or enteropathy by sensitivity to gluten. Our aim has been to diagnose the gluten intolerance in the child by immunological methods. Both IgA and IgG anti-gliadin antibodies (AGA) are detected in sera of patients with gluten sensitive enteropathy (celiac disease). IgG anti-gliadin antibodies are more sensitive but are less specific markers for disease compared with IgA class antibodies. IgA anti-gliadin antibodies are less sensitive but are more specific. In clinical trials, the IgA antibodies have a specificity of 97% but the sensitivity is only 71%. That means that, if a patient is IgA positive, there is a 97% probability that they have celiac disease. Conversely, if the patient is IgA negative, there is only a 71% probability that the patient is truly negative for celiac disease. Therefore, a positive result is a strong indication that the patient has the disease but a negative result does not necessarily mean that they do not have it. False positive results are rather uncommon but false negative results can occur.

Keywords*: intolerance, gluten, gliadin, gastrointestinal disorder.*

Introduction

Celiac disease is digestive disease that damages the small intestine and interferes with absorption of nutrients from food. People who suffer from celiac disease cannot tolerate a protein called "gluten" which is found in wheat, rye and barley (Carroccio *et al*., 1993; Verdu *et al*., 2009; Walker-Smith, 1990). Gluten can be found in many foods but can also be found in food products that we use every day as well as medicines and vitamins.

When people with celiac disease consume products containing gluten, their immune system responds by damaging the small intestine. Small elevations in the form of intestinal mucosa finger damaged or destroyed. These increases, called "clusters", normally absorb nutrients and pass them into the blood (Green & Cellier, 2007; Thompson *et al*., 1999). Without these clusters healthy person becomes malnourished regardless of the amount of food they eat.

Celiac disease affects people in different ways. Signs may be in the digestive system or in other parts of the body. In fact, frustration is one of the common signs that appear in children. A person with celiac disease may not have any signs. People without signs also are at risk of disease complications including malnutrition. The person subsequently diagnosed with celiac disease, the more likely it is to progress malnutrition and complications that it carries (Carroccio *et al*., 2002; Mäki *et al*., 2003; Sapone *et al*., 2012).

Celiac disease is genetic, which means inherited by relatives. Sometimes the disease promotes or become actively for the first time after surgery, pregnant or, childbirth, viral infection or severe emotional situations that cause stress.

However because celiac disease is hereditary, family members, especially the first generation, which means parents, children or the children of people who are diagnosed with celiac disease, may make screening examinations. Statistics show that 5-15% of people who have relatives with celiac disease, may be affected by this disease. The only treatment for celiac disease is to follow a gluten-free diet. When a patient is diagnosed with celiac disease doctor recommends to consult with a

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nutritionist to develop a gluten-free diet (Troncone & Jabri, 2011; Picarelli *et al*.,1996). Dietician is a health care professional specializing in food and nutrition. A person with celiac disease need to know which are the foods that contain gluten and avoid their consumption. For many people, following this diet stops signs, repairing damage in the gut and prevent further damage. In children and young people, small intestine and heal within 3-6 months of age for two years. In this case, recovery means that clusters are able to absorb nutrients and to pass into the blood stream (Picarelli *et al*., 1996; Sapone *et al*., 2012).

Some patients may have a reaction to other proteins present in gluten containing cereals that are able to inhibit amylase and trypsin (-α-amylase/trypsin inhibitors [ATIs]). ATIs are part of the plant's natural defense against insects and was shown to cause toll-like receptor 4 (TLR4)-mediated intestinal inflammation in humans. These TLR4-stimulating activities of ATIs are limited to gluten containing cereals (wheat, rye, barley, and derivatives) and they may be the inducers of innate immunity in people with celiac disease or NCGS. ATIs resist photolytic digestion. ATIs are about 2-4% of the total protein in modern wheat and 80–90% in gluten (Carroccio *et al*.,1993; Green & Cellier, 2007; Mäki *et al*., 2003).

The diagnosis of food allergy is still based primarily on a detailed medical history and comprehensive physical examination. Clinical or laboratory tests only serve as an add-on tool to confirm the diagnosis (Thompson *et al*.,1999; Troncone & Jabri, 2011). The standard techniques include skin prick testing and in-vitro testing for specific IgE-antibodies, and oral food challenges.

Material and Methods

The standard techniques include skin prick testing and in-vitro testing for specific IgE-antibodies, and oral food challenges. Properly done, oral food challenges continue to be the gold standard in the diagnostic workup. Recently, unconventional diagnostic methods are increasingly used. These include food specific IgG, antigen leucocyte antibody and sublingual/intradermal provocation tests, as well as cytotoxic food and applied kinesiology and electrodermal testings. To diagnose celiac disease we have done the blood tests to measure levels of antibodies:

- Immunoglobulin A (IgA)
- Anti -tissue trans-glutaminase (tTGA)
- Endomisium anti- IgA antibodies (AEA)
- IgG-mediated immuno-allergy tests to wheat (skin prick tests and serum-specific IgG-RASTs)

Before the end of these tests should be used a normal diet with foods containing gluten, such as: White bread, pasta. If it stops normal diet before being tested, the results may be negative for celiac disease even when it is actually present. If tests and signs suggest celiac disease doctor will biopsy material in the intestine. This doctor realizes through the endoscopy where material is taken and evaluated in the laboratory with special dimension to view damage chorionic.

The diagnosis of food allergy is still based primarily on a detailed medical history and comprehensive physical examination. Clinical or laboratory tests only serve as an add-on tool to confirm the diagnosis. The standard techniques include skin prick testing and in-vitro testing for specific IgE-antibodies, and oral food challenges. Properly done, oral food challenges continue to be the gold standard in the diagnostic workup. We include food specific IgG, antigen leucocyte antibody and sublingual/intradermal provocation tests, as well as cytotoxic food and applied kinesiology and electrodermal testings. These tests, therefore, should not be advocated in the evaluation of patients with suspected food allergy because the results do not correlate with clinical allergy and may lead to misleading advice and treatment.

Results and Disscussion

If you have an intolerance to gluten, our body produces an inflammatory response to gluten proteins: as a food-specific IgG reaction. Gluten is found in foods processed from wheat and related grains, giving elasticity to dough, helping it to rise and keep its shape. If someone have gluten intolerance he/she should avoid eating wheat and similar grains. However, if someone have wheat intolerance alone, you do not necessarily need to avoid gluten. Gluten is found in wheat, rye, barley and any foods made with these grains. It can be difficult to identify all the foods you need to avoid as these grains are often used as thickening agents in processed foods, sauces and even meat products. In our study,the

higer percentage or cases are cauesed by wheat and the cracked, and lesser percentage or cases are caused by camut and couscous.as showed in the Figure 1.

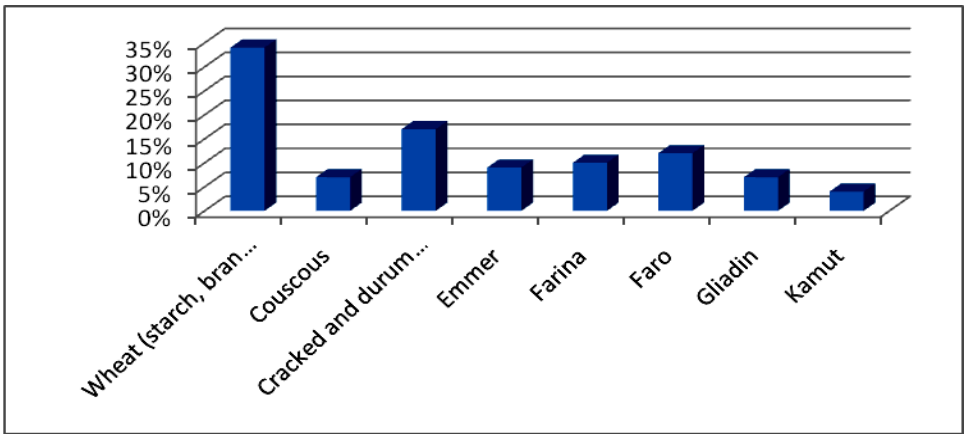

Figure 1: Percentage of foods which caused symptoms of gluten intolerance

We have tested the immunoglobulins/ antibodies: anti-TTG antibodies, IgA; total IgA; anti-TTG antibodies, IgG; anti-DGP, IgA; anti-DGP, IgG and we observed the diagnoses:

- Presumptive celiac disease, where we have positive anti-TTG antibodies, IgA and total IgA.
- Symptoms not likely due to celiac disease where only IgA total was positive.
- Possible celiac disease (false negative anti-tTG, IgA and anti-DGP, IgA are due to total IgA deficiency) where: anti-TTG antibodies, IgA was negative; total IgA was in low level; anti-TTG antibodies, IgG was positive; anti-DGP, IgA was negative; and anti-DGP, IgG was positive.
- Possible celiac disease has been where: anti-TTG antibodies, IgA was negative; total IgA was positive; anti-TTG antibodies, IgG was negative; anti-DGP, IgA was positive; and anti-DGP, IgG was positive.

All positive and indeterminate celiac disease tests are typically followed by an intestinal biopsy. A biopsy is used to make a definitive diagnosis of celiac disease. If someone has been diagnosed with celiac disease and eliminates gluten from his or her diet, then the autoantibody levels should fall. If they do not fall and the symptoms do not diminish, then there may either be hidden forms of gluten in the diet that have not been eliminated (gluten is often found in unexpected places, from salad dressings to cough syrup to the adhesive used on envelopes) or the person may have one of the rare forms of celiac disease that does not respond to dietary changes. When celiac disease tests are used to monitor progress, rising levels of autoantibodies indicate some form of noncompliance with a gluten-free diet.^

Table 2. The RAST rating and the evaluation of IgG level.

RAST rating	IgG level (IU/ml)	Percentage of the cases	Obsereved
0	< 0.35	64	Absent Or Undetectable Allergen Specific IgG
1	0.35 - 0.69	10	Low Level Of Allergen Specific IgG
2	0.70 – 3.49	8	Moderate Level Of Allergen Specific IgG
3	3.50 – 17.49	4	High Level Of Allergen Specific IgG
4	17.50 – 49.99	5	Very High Level Of Allergen Specific IgG
5	50.00 – 100.00	3	Very High Level Of Allergen Specific IgG
6	> 100.00	6	Extremely High Level Of Allergen Specific IgG

Not: The RAST is scored on a scale from 0 to 6:

From our data, 64% resulted with absent of undetectable allergen specific IgG (less than 0,35 IU/ml); 10% resulted with moderate level of allergen specific IgG (0.35- 0.69 IU/ml); 8% resulted with very high level of allergen specific IgG (17.50-100.00 IU/ml IU/ml); and 6% resulted with extremely high level of allergen specific IgG (more than 100.00 IU/ml).

Both IgA and IgG anti-gliadin antibodies (AGA) are detected in sera of patients with gluten sensitive enteropathy. IgG anti-gliadin antibodies are more sensitive but are less specific markers for disease compared with IgA class antibodies. IgA anti-gliadin antibodies are less sensitive but are more

specific. A positive result is a strong indication that the patient has the disease but a negative result does not necessarily mean that they do not have it. False positive results are rather uncommon but false negative results can occur.

Table 2. The sensibility and sensitivity of IgA and IgG

Immunoglobulin	Sensitivity	Specificity
IgA anti-gliadin	71%	97%
IgG anti-gliadin	87%	91%

On the other hand, the IgG anti-gliadin antibodies are 91% specific and have 87% sensitivity. This means that they will show positive results more readily but there is not as strong a correlation with celiac disease. It is less specific. Patients with other conditions but not afflicted with celiac disease will occasionally show positive results. IgG anti-gliadin antibodies are detectable in approximately 21% of patients with other gastrointestinal disorders. This test might yield false positive results but is less likely to yield false negative results.

If the person being tested has not consumed any gluten for several weeks to months prior to testing, then celiac disease tests may be negative. If the health practitioner still suspects celiac disease, he or she may do a gluten challenge – have the person introduce gluten into his or her diet for several weeks or months to see if the symptoms return. At that time, celiac disease tests may be repeated or a biopsy may be done to check for damage to the villi in the intestine. Food intolerance is accompanied from the other clinical symptoms and analyses as anemia, wheight lost. At the same time we have observed and self reported wheat intolerance or history of food intolerance.

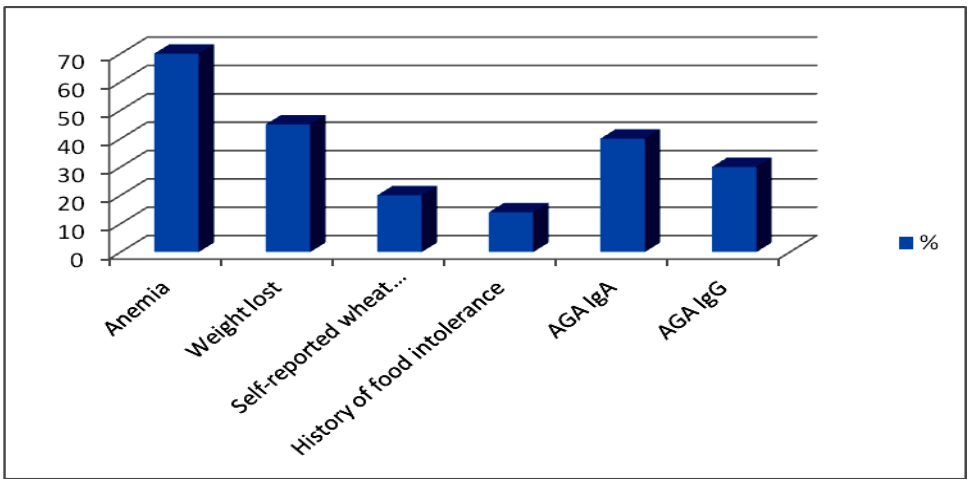

Figure 2. Clinical and serologic characteristics in patients suffering from wheat sensitivity including wheat

Conclusion

At present, there are no reliable and validated clinical tests for the diagnosis of food intolerance. While intolerances are non-immune by definition, IgA and IgG testing are actively promoted for diagnosis, and to guide management. These tests lack both a sound scientific rationale and evidence of effectiveness. The lack of correlation between results and actual symptoms, and the risks resulting from unnecessary food avoidance, escalate the potential for harm from this test. Further, there is no published clinical evidence to support the use of IgG tests to determine the need for vitamins or supplements. In light of the lack of clinical relevance and the potential for harm resulting from their use, allergy and immunology organizations worldwide advise against the use of IgG and IgA testing for food intolerance.

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