ATTACHMENT:

Useful remarks for patient and doctor, to be associated to the analytical results. Your doctor should interpret this report.

Cod. ID: 123456
CCV: 151
Date: 01/01/2013
Patient: Rossi Mario

Rapport de:
NatrixLab
Via Cavallotti, 16
42122 Reggio Emilia
Aut.n. 67 del 26.01.10
Direttore Sanitario
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CELIAC TEST
(Immune assessment of possible positivity to Celiac Disease)

CELIAC DISEASE

CELIAC DISEASE AND GLUTEN INTOLERANCE

GLUTEN

WHAT CAUSES CELIAC DISEASE AND WHAT ARE THE SYMPTOMS?

HOW IS IT DIAGNOSED?

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CELIAC DISEASE

CELIAC DISEASE AND GLUTEN INTOLERANCE

Celiac disease (CD) is a permanent intolerance of gluten, a protein complex contained in wheat, spelt, rye, kamut, barley, wheat gluten and other lesser cereals.
In persons suffering from or predisposed to this disease, when gluten is eaten, the gliadin peptides (deriving from its digestion) are recognised by the HLA system, present on the cells of the immune system, as being foreign to the body and are attacked to eliminate them. This reaction causes triggering of an inflammation of the intestinal villi, which over the passage of time and with the ingestion of gluten suffer such significant damage as to cause their gradual atrophy, with a consequent loss of the small intestine's ability to absorb nutrients.

There is also a genetic predisposition to the disease, due to a particular type of HLA: HLA DQ2 and HLA-DQ8. This type of HLA is necessary but not sufficient on its own for the onset of CD, since approximately 25-32% of the healthy population in Northern Europe have the same haplotype without suffering from celiac disease.

The incidence of such intolerance in Italy is estimated at 1 in 100.

Not a very optimistic outlook, given that today only 1 in 8 people suffering from celiac disease is aware of having the disease: In Italy there are about 400,000 cases of undiagnosed celiac disease.

There are various types of CD:

1. The **typical** or **classic** form: appears in the first 6-24 months of life, slightly after weaning. The symptoms of this form are diarrhoea, abdominal pain, flatulence, lack of appetite and vomiting.

2. The **atypical** form: appears at a later stage, even in adult life and manifests with intense abdominal pain associated with non-intestinal symptoms such as anaemia, leading to chronic fatigue and weariness, osteopenia, dermatitis herpetiformis, anorexia, recurrent mouth sores, alterations of the tooth enamel, constipation, alopecia, deficiency of trace elements and other nutrients. In children these symptoms of malabsorption may lead to rickets, small stature and late development of secondary sexual characteristics in puberty.

3. **Silent** form: no particular symptoms, found in groups with a family history of the disease or in subjects suffering from other autoimmune diseases.

4. **Latent** form: no perceived symptoms and no damage of the intestinal barrier, but with positive serological results. This form may manifest and evolve into declared celiac disease at a later date; regular monitoring and testing of such subjects is therefore recommended.

GLUTEN

Gluten is a protein complex composed of two types of protein, glutelins (or glutenins) and prolamins (or gliadins), which together account for 80% of the proteins present in wheat, the remaining 20% is composed of soluble proteins such as albumins and globulins.

Gluten is a gluey substance widely used in the modern food industry to increase the elasticity and consistency of the final product, facilitating the rising of dough and bread making. It is present in bread, pasta, biscuits, pizza and any other product containing the cereals specified above. But not only, it is also used as an ingredient for sauces, soups, pre-cooked products and as a thickening agent for making the tablet formulas of some medications.

Among the cereals not containing gluten are corn, rice, millet, amaranth, quinoa, buckwheat, sorghum and manioc.

WHAT CAUSES CELIAC DISEASE AND WHAT ARE THE SYMPTOMS?

Eating gluten, even in small quantities, for patients affected by or predisposed to the disease, causes serious damage of the intestinal lining, with a consequent inefficient absorption of nutrients. This does not happen immediately, but if the disease is not diagnosed in time, the intestinal tract may be irreversibly damaged.

All this happens because the gliadin deriving from the gluten triggers a strong immune reaction, with increased inflammation of the intestinal lining and cavity. This reaction is caused and propagated by the presence and increased concentration of pro-inflammatory cytokines and immune cells penetrating the area. The progress of the disease may also occur in the reverse condition, namely in a subject suffering from an intestinal inflammation of a different type which may trigger an alteration of the intestine' permeability to gliadin.

Malabsorption may have serious consequences and is particularly dangerous in children. Celiac disease, classified as an autoimmune disease may also be associated with other conditions: diabetes mellitus type I, autoimmune thryoiditis and other autoimmune syndromes sharing the haplotype HLA-DQ2.

HOW IS IT DIAGNOSED?

The diagnostic procedure may be divided into three parts. In any case the assays to be used are serological tests (assessment of the antibody markers) and duodenal biopsy. The genetic test for assessing the HLA haplotype is only a second level test, suitable for assessing celiac disease compatibility in cases of doubt. (from *Celiac disease diagnosis and follow-up guidelines. AIC*)

The "Celiac Test" is an allergometric test which shows positivity to Celiac Disease with a high degree of sensitivity and specificity.

The assessment is performed by dosing class IgA and IgG antibodies against:

- Anti-Tissue Transglutaminase (anti-tTG)
- Anti-deamidated gliadin (anti-DGP)

In the past, the only way of diagnosing celiac disease was to perform a biopsy, an invasive method, on a section of the duodenum. The development of serological tests highlighting the presence of specific antibodies of the disease has enabled identification of the silent form and the potential form, avoiding biopsies in doubtful cases proving negative. Over recent years all this has led an identification of celiac subjects who would otherwise not have been diagnosed and of subjects at risk referred for an endoscopic exam.

A biopsy is still however the invasive diagnostic test used and required for diagnosis of celiac disease.

The "Celiac Test" uses a standardised method ELISA which offers a high degree of specificity and sensitivity.

Recent research conducted on celiac disease has clarified that transglutaminase causes the partial deamination of gliadin, generating peptides which may induce a specific response by antibodies. A laboratory test has therefore been developed which reveals the deamidated anti-gliadin antibodies (anti-DGP), shown to be more accurate than the measurement of the anti-gliadin antibodies used so far. The anti-DGP test thus permits a more reliable laboratory diagnosis.

The anti-DPG antibodies are the first antibodies to appear in subjects suffering from celiac disease. Measurement of the IgA is useful for diagnosing the disease in its active phase and for monitoring the patient after prescribing a gluten-free diet. The anti-DPG IgG are a more sensitive but less specific marker, even though of fundamental importance in cases of IgA deficiency, often present in celiac patients.

During the active phase of the disease, the anti-DPG IgA and IgG and anti-tTG values are high, while after a few months and up to a year of a gluten-free diet only the IgG values may remain high for both markers.

Measurement of the anti-tTG IgA is extremely sensitive and specific, both during diagnosis and follow-up. Where there is a shortage of IgA however, the identification of the IgG becomes necessary. As regards follow-up, the anti-tTG antibodies become negative later than the anti-DPG antibodies in the case of a gluten-free diet and the IgA disappear first, before the IgG.

When diagnosing celiac disease, the choice of test is of crucial importance, since in patients with minimum histological lesions, the search for anti-DPG antibodies alone may fail to diagnose the disease even though present. In the same way, the search for anti-tTG antibodies alone may fail to diagnose the disease in those adults where the anti-tTG antibodies have not yet appeared.

TREATMENT AND CURE

Currently the only treatment possible is to follow a strict gluten-free diet. This treatment not only permits disappearance of the symptoms (within a couple of months) but also prevents the onset of autoimmune or other complications.

REPETITION OF THE TEST

Should there be a family history of celiac disease or in cases of celiac patients on a gluten-free diet, repetition of the test is recommended. In the case of therapeutic monitoring repeat the test as advised by your doctor. In the case of difficulty of interpreting the test results or in the presence of other medical conditions, consult specialist able to provide tailored care.

IMPORTANT

The test results should in any case always be considered by the doctor within the specific clinical situation of the individual patient.
This test may not be partially copied.

The test results, graphs and explanations provided in this folder should not be construed as a medical diagnosis. They are merely a tool available to the doctor who may use them to supplement the findings of a physical examination or other diagnostic tests, so as to formulate the correct treatment and diagnosis of the state of the patient.

TEST RESULTS:

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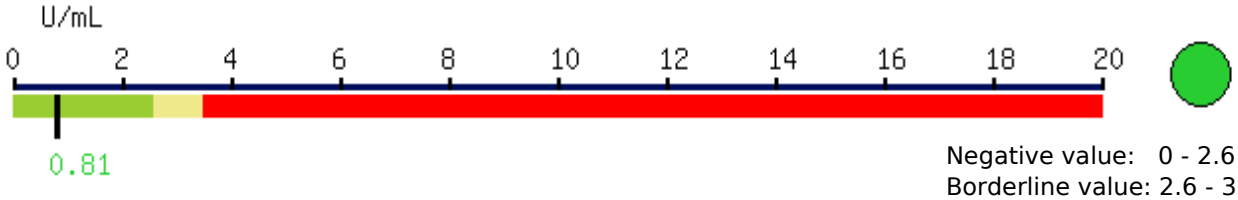
CELIAC TEST
(Immune assessment of possible positivity to Celiac Disease)

Dott.ssa Ausilia Rausa

Results

IgA ANTI-TRANSGLUTAMINASE 0.81 U/mL



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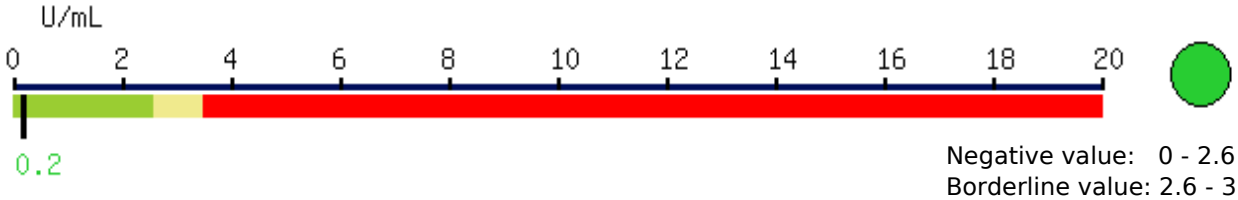
Borderline value: 2.6 - 3.5
Positive value: 3.5 - 100

IgG ANTI-TRANSGLUTAMINASE 0.2 U/mL



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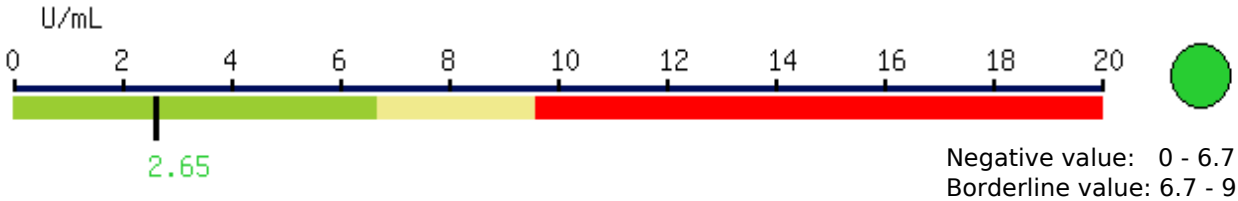
Borderline value: 2.6 - 3.5
Positive value: 3.5 - 100

IgA ANTI-DEAMIDATED GLIADIN 2.65 U/mL



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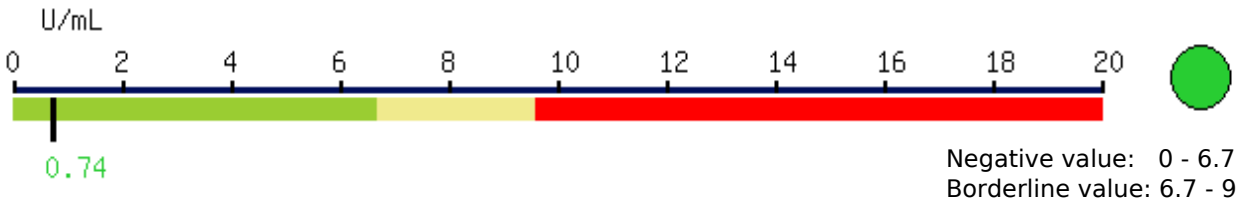
Positive value: 9.6 - 100

IgG ANTI-DEAMIDATED GLIADIN 0.74 U/mL



Negative value: 0 - 6.7
Borderline value: 6.7 - 9.6
Positive value: 9.6 - 100