Celiac Disease an introduction

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Introduction

Celiac disease is a digestive disease that damages the small intestine and interferes with absorption of nutrients from food. It is non-IgE mediated (cell mediated) food allery.People who has celiac disease cannot tolerate gluten, a protein in wheat, rye, and barley. Gluten is found mainly in foods but may also be found in everyday products such as medicines, vitamins, and lip balms. When people with celiac disease eat foods or use products containing gluten, their immune system responds by damaging or destroying villi—the tiny, finger like protrusions lining the small intestine. Villi normally allow nutrients from food to be absorbed through the walls of the small intestine into the bloodstream. Without healthy villi, a person becomes malnourished, no matter how much food one eats. Celiac disease is both a disease of malabsorption—meaning nutrients are not absorbed properly—and an abnormal immune reaction to gluten. Celiac disease is also known as celiac sprue, non-tropical sprue, and gluten-sensitive enteropathy. Celiac disease is genetic, meaning it runs in families. Sometimes the disease is triggered—or becomes active for the first time—after surgery, pregnancy, childbirth, viral infection, or severe emotional stress.

Toxic mechanism of Gluten sensitivity

Significant progress was made in identifying the mechanism of the toxic reaction in celiac disease. Gluten peptides must be able to reach the gut epithelium. It is not known how they are able to cross, but once in the epithelium, they are (in part) deamidated by tissue type transglutaminase. As a result, specific gliadin or glutenin peptides are able to bind to an antigen presenting cell (APC). This cell presents the antigen to a CD4 T-cell, which becomes activated and produces signals that activate both plasma cells (production of anti IgA antibodies against gluten/gliadin and TTG) and lymphocytes. It is thought that this process also leads to damage of the intestinal epithelium. As a result, the capacity of the gut to absorb is dramatically reduced, leading to a number of malabsorption symptoms.

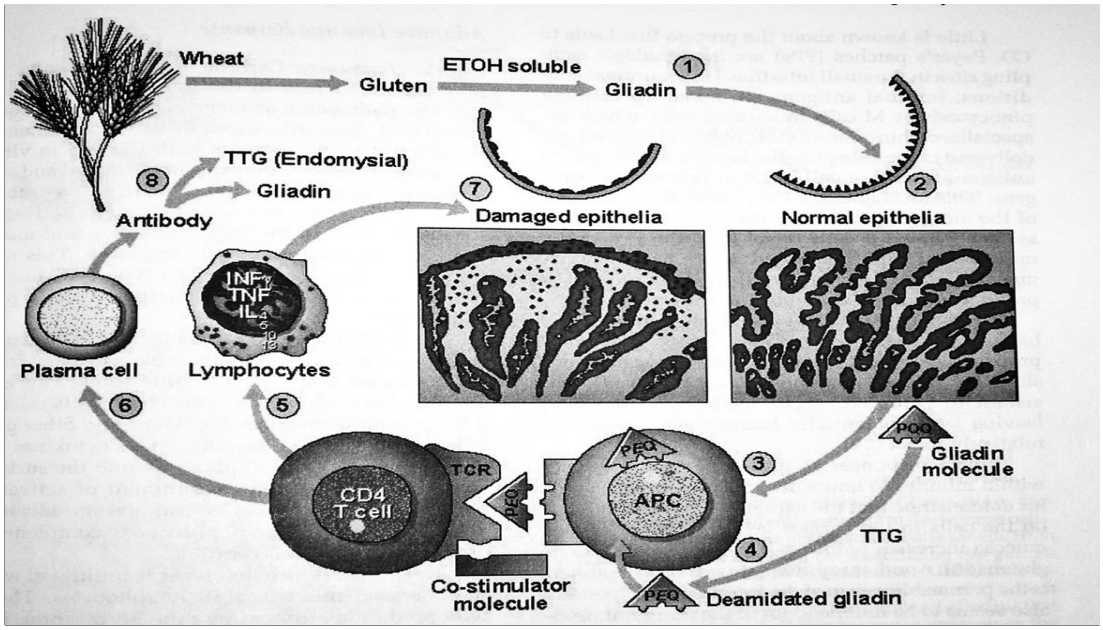

Fig1: gluten sensitivity(celiac Disease) mecanism

Sign and Symptom of Celiac Diseases

Celiac diseases symptoms are varied in nature. It is very difficult to identify this disease based on sign and symptom. Researchers are studying the reasons celiac disease affects people differently. The length of time a person was breastfed, the age a person started eating gluten-containing foods, and the amount of gluten-containing foods one eats are three factors thought to play a role in when and how celiac disease appears. Some studies have shown, for example, that the longer a person was breastfed, the later the symptoms of celiac disease appear.

Symptoms also vary depending on a person's age and the degree of damage to the small intestine. Many adults have the disease for a decade or more before they are diagnosed. The longer a person goes undiagnosed and untreated, the greater the chance of developing long-term complications.

People with celiac disease tend to have other diseases in which the immune system attacks the body's healthy cells and tissues. The connection between celiac disease and these diseases may be genetic. They include

- type 1 diabetes
- autoimmune thyroid disease
- autoimmune liver disease
- rheumatoid arthritis
- Addison's disease, a condition in which the glands that produce critical hormones are damaged
- Sjögren's syndrome, a condition in which the glands that produce tears and saliva are destroyed

Celiac Diseases prevalence

Celiac disease affects people in all parts of the world. Originally thought to be a rare childhood syndrome, celiac disease is now known to be a common genetic disorder. More than 2 million people in the United States have the disease, or about 1 in 133 people. Among people who have a first-degree relative—a parent, sibling, or child—diagnosed with celiac disease, as many as 1 in 22 people may have the disease.Celiac disease is also more common among people with other genetic disorders including Down syndrome and Turner syndrome, a condition that affects girls' development.

Diagnosis of celiac Disease

Diagnosis of celiac disease is quit difficult due to varied sign and symptoms. Celiac disease can be confused with irritable bowel syndrome, iron-deficiency anaemia caused by menstrual blood loss, inflammatory bowel disease, diverticulitis, intestinal infections, and chronic fatigue syndrome. As a result, celiac disease has long been under diagnosed or misdiagnosed. The only way of diagnosis is Blood sample test followed by Intestinal biopsy.

Blood Test:
People with celiac disease have higher than normal levels of certain auto antibodies—proteins that react against the body's own cells or tissues—in their blood. To diagnose celiac disease, doctors will test blood for high levels of anti-tissue transglutaminase antibodies (tTGA) or anti-endomysium antibodies (EMA). If test results are negative but celiac disease is still suspected, additional blood tests may be needed.

Intestinal Biopsy

If blood tests and symptoms suggest celiac disease, a biopsy of the small intestine is performed to confirm the diagnosis. During the biopsy, the doctor removes tiny pieces of tissue from the small intestine to check for damage to the villi. To obtain the tissue sample, the doctor eases a long, thin tube called an endoscope through the patient's mouth and stomach into the small intestine. The doctor then takes the samples using instruments passed through the endoscope.

Treatment of Celiac patient

The only treatment for celiac disease is a gluten-free diet. Some people with celiac disease show no improvement on the gluten-free diet. The most common reason for poor response to the diet is that small amounts of gluten are still being consumed. Hidden sources of gluten include additives such as modified food starch, preservatives, and stabilizers made with wheat. And because many corn and rice products are produced in factories that also manufacture wheat products, they can be contaminated with wheat gluten.

Rarely, the intestinal injury will continue despite a strictly gluten-free diet. People with this condition, known as refractory celiac disease, have severely damaged intestines that cannot heal. Because their intestines are not absorbing enough nutrients, they may need to receive nutrients directly into their bloodstream through a vein, or intravenously. Researchers are evaluating drug treatments for refractory celiac disease