

Celiac disease research paper example

[Health & Medicine](#), [Disease](#)



**ASSIGN
BUSTER**

The paper being discussed today, includes the disease Celiac disease and the laboratory department the sample is tested in.

Pathology Department

The pathology department is a laboratory where tests are performed on clinical specimen of a person like blood, urine, stools, sputum etc in order to study the health condition of the patient. In other words, it studies the etiology of a disease. The hematology department is a subcategory of pathology that focuses on the study of blood and the disease causing pathogens in the blood.

Hematology testing

The lavender vacuum tubes are used for complete blood counts. The additive for the tube is EDTA. Special requirements for the tubes are 1 ml of pure blood left at room temperature to be tested immediately. The test results can be refrigerated upto 24 hours.

The red vacutainer tubes are used for the anemic profile. There are no additives used since the blood and serum is separated by centrifuge. Two 2ml tubes of blood need to be refrigerated.

Introduction

Celiac disease is an autoimmune disease of the small intestine. During the functioning of the gastrointestinal system, food passes from the stomach to the small intestine where it is digested and nutrients are absorbed in the circulation. The food that enters the large intestine/colon is largely undigested food. This is the normal course of food in normally functioning

gastrointestinal system. However, in celiac disease, there is an allergic reaction to the inner lining of small intestine. The allergy is due to proteins (gluten) that is present to a larger extent in wheat and to a lesser extent in oats. This autoimmune reaction causes the inner lining of the small intestine to get inflamed, which results in its damage. The damage further results in reduced absorption of dietary nutrients and can lead to signs and symptoms of nutritional deficiencies (Anand, 2011).

Celiac disease is commonly seen in European countries particularly Sweden, Ireland, Italy, and Austria. In these countries, one on every three hundred individuals have celiac disease; while in a country like Finland, the prevalence is as high as one in hundred individuals. After Europe, it is common in the USA with one in every three thousand individuals suffering from the disease (Anand, 2011). Some other names for celiac disease are sprue, gluten intolerance, nontropical sprue, or gluten-sensitivity enteropathy (Pubmed Health, 2010).

Causes

Gluten belongs to a family of proteins and is present largely in wheat. A component of gluten known as gliadin is the one that causes the immunological reaction in celiac disease. The mechanism of gliadin becoming toxic is still not clear; but research is ongoing. There is evidence that the immunological reaction is partially inherited and partially genetic. Research has also shown that some genes are more common in individuals with celiac disease than in those without celiac disease (Anand, 2011). The finger like projections known as villi on the inner surface of small intestine that increase the surface area available for absorption of nutrients,

are destroyed. This forces the inner lining of the small intestine to become flat, thus reducing the availability of surface area available for absorption of nutrients. This leads to an impaired absorption of nutrients, commonly referred as malabsorption. Malabsorption subsequently leads to nutrient deficiencies, referred to as malnutrition (Anand, 2011).

Signs and symptoms

The severity of signs and symptoms depends upon the length of the small intestine involved. Symptoms also vary depending on the degree of malabsorption and may range from no symptoms at all to severe symptoms. Signs and symptoms of celiac disease either can be due to malabsorption or due to nutritional deficiency. The absorption of all three dietary nutrients, carbohydrates, proteins, and fats is reduced; however, absorption of fat is very severely affected. Most of the gastrointestinal symptoms are actually due to inadequate absorption of fat; the symptoms include abdominal bloating, foul smelling flatulence, diarrhea, and increased amount of fats in the stools, a condition known as steatorrhea (Anand, 2011). The stools may be loose, not formed fully, yet not watery, pale in color, yeasty, frothy, and stinky (Tommasini, 2011). The signs and symptoms related to lactose (carbohydrate) malabsorption are diarrhea, excessive flatulence, abdominal bloating, and abdominal pain. Malnutrition may lead to anemia, weight loss, fluid retention, brittle bone disease, infertility, nerve damage, muscle weakness and easy bruises. A blood test may show elevated levels of aspartate amino transferase (AST) and/or leucine amino transferase (ALT) (Anand, 2011).

Diagnosis

When any of the above discussed signs and symptoms are present, celiac disease should be suspected. It is quite possible that some other diseases like pancreatic insufficiency or Crohn's disease may also produce similar signs and symptoms. It is, therefore important to confirm suspected disease by conducting appropriate laboratory tests (Anand, 2011).

Biopsy of the small intestine performed by esophagogastroduodenoscopy is considered to be the most reliable diagnostic test for celiac disease. Blood tests for celiac disease include anti-tissue transglutaminase antibodies, antigliadin antibodies, and endomysial antibodies. A new test for diagnosing celiac disease is a test for antibodies to deamidated gliadin peptides, which are parts of gliadin molecules. If this test is negative, then perhaps there is no need of biopsy of the small intestine. However, this research is still in nascent stage (Anand, 2011).

All children are screened for celiac disease in countries like Italy where celiac disease is common, but screening in healthy individuals is not done in US. Celiac disease causes both malabsorption and malnutrition. However, other diseases can too cause both the conditions. Therefore, these tests cannot be used to diagnose celiac disease (Anand, 2011).

Treatment

Celiac disease has no cure; however, symptoms can be controlled by putting a patient on a gluten free diet. In other words, the cure lies in diet. Tolerance to gluten varies from person to person; some patients will be symptomless on smaller amounts of gluten while some may exhibit severe symptoms even on a little amount of gluten in diets. The standard treatment is to completely

avoid the gluten. Therefore, a food made from wheat has to be avoided along with that made from barley and oats. Some processed foods may contain gluten since wheat is a common ingredient in some processed foods like canned soup, ice cream, salad dressings, ketchup, sausages, and pasta. Wheat starch is also commonly used as a binding agent in certain tablets and capsules. Alcoholic beverages in the form of beer need to be avoided as it contains barley. Celiac disease patients also have to cut down on milk and milk products since they contain lactose (Anand, 2011).

Dietitians can be consulted for a list of gluten free foods. Vitamin and mineral supplements are important. A daily dose of multivitamin is important. Iron deficiency anemia patients should be treated with iron. Vitamin B12 and folate deficiency anemia patients should be treated with folic acid and vitamin B12. Brittle bone disease individuals should be treated with calcium and vitamin D supplements (Anand, 2011).

In any case, in most of the celiac disease individuals, a gluten free diet will result in improvement of the symptoms in just few weeks or just in a couple of days. However complete normalization of the intestinal villi takes months. Patients usually fail to understand the importance of strict gluten -free diet. In several studies, patients have been seen to follow gluten -free diet, but that was for a symptom-free life and not for prevention of complications like osteoporosis and anemia (Anand, 2011).

Summary

In summary, celiac disease is a disease of small intestine with no known cure for the disease, but yet the cure lies in diet. In a small intestine with celiac disease, the finger-like projections, the villi, are damaged making the inner

lining of the small intestine flatter. This results in an decreased absorption of nutrients. Decreased absorption further leads to malnutrition and subsequently all the diseases that occur due to deficiency in vitamins and minerals. It is an autoimmune disease caused due to allergy to gluten, a substance present in wheat to a larger extent, and oats to a lesser extent. Common symptoms are diarrhea, abdominal bloating, flatulence, and fatty stools, but these may be present in other diseases also. Therefore, a diagnosis of celiac disease needs to be confirmed by blood tests and biopsy. Biopsy, performed by esophagogastroduodenoscopy is considered to be the most reliable diagnostic test; besides a new blood test has been developed for diagnosing celiac disease is a test for antibodies to deamidated gliadin peptides, which are parts of gliadin molecules. If this test is negative, most probably, it means a biopsy is not required. Complications of the disease include vitamin or iron deficiency and osteoporosis. The treatment lies in including a gluten-free diet. With this a person can not only achieve a symptom-free life but also complications of the disease will not arise. An individual who is already facing the signs and symptoms of the disease should be given multivitamins in addition to a gluten-free diet.

Picture 1

Picture 2

Say No to Wheat

Picture 3

Normal and damaged small intestine

References:

Anand, B., (2011) Celiac Disease. Medicine Net. Available at: http://www.medicinenet.com/celiac_disease; Accessed: 05th April, 2013

Celiac disease – sprue. (2010) Pubmed Health. US National Library of Medicine. Retrieved from: <http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0001280/>; Accessed: 06th April, 2013.

Tommasini, A., Not, T., Ventura, A. (2011) Ages of celiac disease: From changing environment to improved diagnostics. World J Gastroenterol, 17, 3665 – 71.

References for pictures**Picture 1:**

Anand, B., (2011) Celiac Disease. Medicine Net. Available at: http://www.medicinenet.com/celiac_disease; Accessed: 05th April, 2013

Picture 2:

The Celiac Disease Resource. Retrieved: <http://celiacresource.org/about.htm>; Accessed: 06th April 2013.

Picture 3:

Celiac disease. MedindiaNet. Retrieved from: <http://www.medindia.net/slideshow/celiac-disease.asp>; Accessed: 06th April 2013