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Editorial

Gluten-free diet: is it really always beneficial?

Glutensiz diyet: gerçekten her zaman yararlı mı?

Tufan Kutlu

Division of Gastroenterology, Department of Pediatrics, Istanbul University-Cerrahpaşa, Cerrahpaşa Faculty of Medicine, İstanbul, Turkey

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In our era, cereals have a very important role in nutrition for mankind. Gluten is a protein found in cereals, mainly including wheat, barley, and rye. Currently, gluten has become a nutrient that is frequently being mentioned because of its relationship with different diseases. At the present time, celiac disease is the first disease that comes to mind and the most widely known disease among gluten-related diseases. Although the prevalence of celiac disease varies from country to country, it is generally estimated to be about 1/100–200, which is similar to the prevalence in our country (1, 2). It is known that this disease occurs more frequently in some risk groups (close relatives of patients, juvenile diabetes, Down syndrome, HLA DQ2 and/or DQ8-positive individuals) (3). Chronic diarrhea and related growth and developmental delay are the most important manifestations; however, most patients may be asymptomatic. This may cause diagnostic and therapeutic difficulty (1, 3).

A gluten-free diet has constituted the most important part of treatment in celiac disease since the day the role of gluten consumption in the development of this disease was understood (4). In a gluten-free diet, consumption of all nutrients containing wheat, barley, and rye flour is forbidden. Corn and rice are not harmful and may be used in place of the others. Currently, there is a consensus that all patients with celiac disease should strictly adhere to gluten-free diets and continue this lifelong. It has been shown that short stature, various vitamin deficiencies, rickets, osteomalacia, and some autoimmune diseases may develop in patients with celiac disease who do not adhere to a gluten-free diet (5).

The second gluten related disease is gluten allergy. Although the name 'gluten' is mentioned very frequently among nutrients that most commonly cause allergy, gluten allergy is not actually observed so frequently. In the United States of America, the rate of celiac disease diagnosed by physicians has been reported as 0.4% in children, though gluten has been defined to be one of the most common causes of allergy (6). Immediate hypersensitivity reaction (angioedema, shock) or late skin manifestations (rash, urticaria), gastrointestinal symptoms (vomiting, diarrhea) or respiratory symptoms (rhinitis, bronchitis, asthma) may be observed with gluten intake. The gluten challenge test, which is characterized by improvement of symptoms with the elimination of foods that contain flour from the diet and recurrence of symptoms when these foods are reintroduced, confirms the diagnosis (7). In contrast to celiac disease, gluten allergy improves in years. In a study conducted with a large series of children, it was found that flour allergy improved in 29%, 56% and 65% of children at the ages of 4 years, 8 years and 12 years respectively (8).

Non-celiac gluten sensitivity is characterized by serologic findings that are incompatible with celiac disease in patients who have clinical symptoms similar to celiac disease (negative tissue transglutaminase and negative anti-endomisium antibodies) and improvement of symptoms with a gluten-free diet despite normal intestinal biopsy findings (9). Although there are no comprehensive epidemiologic studies, it is estimated that the prevalence in adults is about 3–6% (10). Non-celiac gluten sensitivity does not occur very frequently in chil-

Corresponding Author / Sorumlu Yazar: Tufan Kutlu E-mail / E-posta: tufankutlu@hotmail.com

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dren and there is a limited number of studies and publications on this subject (11).

Although the pathogenesis of gluten sensitivity is not well known, symptoms occur with gluten intake and disappear when gluten is eliminated from the diet. The most common clinical symptoms include abdominal pain, abdominal distension, excessive gas, diarrhea or constipation. In addition, fatigue, leg pain, headache, rash and depression may also be observed. Although gluten-free diet is useful in these patients, it is still not fully clear how long a gluten-free diet should be continued (12).

Dermatitis herpetiformis is a skin disease that was defined for the first time by Duhring in 1884 (13). It occurs with pruritic papulovesicular lesions. It may be accompanied by intestinal involvement. Its prevalence has been reported to range between 0.8/100 000 and 75/100 000 in different studies (14). Although the pathogenesis is not well known, the lesions may improve when gluten is removed from the diet. Serologic diagnostic tests including tissue transglutaminase and anti-endomisium antibodies are positive, and similar to celiac disease, intestinal biopsy reveals villus atrophy in 75% of patients. Human leukocyte antigen (HLA) DQ2 and DQ8 are positive in 90% of patients (15). In conclusion, dermatitis herpetiformis may be considered as a form of celiac disease that is manifested by skin symptoms, and a gluten-free diet should be used in treatment.

Gluten ataxia is a sporadic ataxia that occurs without an apparent reason and constitutes 30–40% of all ataxias (16). Celiac disease serology positivity, and in some cases, intestinal biopsy showing villus atrophy, may also be found. It generally occurs after the age of 50 years. A gluten-free diet is essential in treatment (17).

Autism is a complex developmental disorder that occurs in the first three years of life and continues lifelong. It is manifested by problems in social interaction and verbal and non-verbal communication, repetitive behavior, and restricted areas of interest. Currently, its prevalence has been reported to have reached 1/68 (18). The actual cause is not well known. It has been argued that intestinal permeability is increased in a portion of autistic children and some nutrients including casein and gluten may be responsible for the occurrence of this disease. Therefore, 21–66% of families tried gluten-free and casein-free diets (19, 20). When 24 articles published on this subject since 1970 were examined, however, a low level of scientific evidence could be observed in only 4 articles (21). Considering the negative effects of diet on nutrition, it was concluded that this type of diet should only be used if allergy/intolerance could be shown. Otherwise, a gluten-free diet could do more harm than good.

A tendency to gluten-free diets has emerged with a rate reaching 30% in developed Western countries due to the widely accepted idea that gluten has negative effects on health, even if no gluten-associated disease is found. Sometimes, a gluten-free diet is being preferred even for losing weight. The gluten-free product market size is rapidly expanding in these communities. Gluten-free products are considerably more expensive and cause a heavy burden on family budgets (22, 23).

For maintaining a gluten-free diet, patients can easily consume gluten-free foods including milk, meat, vegetables, and fruit, but they need to consume gluten-free foods containing specially prepared flour produced by industry, in place of foods prepared with cereal flour including bread and pasta. It is known that these specially produced gluten-free foods contain lower levels of protein, fiber, iron, and vitamins including folic acid, niacin, thiamin and riboflavin, and more carbohydrates and thus more calories. It has been shown that gluten-free bread contains a 2-fold higher fat content compared with regular bread and gluten-free pasta contains higher levels of carbohydrates and sodium (24).

In this context, inadequate intake of iron, folic acid, calcium, selenium, magnesium, zinc, niacin, thiamin, and vitamin A and D has been shown in individuals who consume gluten-free diets. A high level of homocysteine was found in patients with celiac disease after a ten-year period of a gluten-free diet, though the mucosa was improved. This showed deficiency of folic acid, vitamin B6, and vitamin B12 (25). In addition, it was reported that metabolic syndrome could develop in periods as short as one year after following a gluten-free diet in adult patients with celiac disease (26). In previous years, it was thought that the frequency of gut-associated lymphoma-like malignant diseases increased in patients with celiac disease who did not adhere to a gluten-free diet. Currently, however, it is known that there is an increased risk of mortality because of cardiovascular diseases (27, 28). This may be related to the excessive consumption of gluten-free nutrients.

Due to these reasons, a gluten-free diet should not be used to lose weight or to become healthier, unless there is a gluten-associated disease confirmed by a physician. In the event of medical necessity (e.g. allergy, celiac disease, gluten sensitivity), a gluten-free diet should be used under the supervision of a dietitian who is experienced on this subject, in order to prevent deficiency of macro- and micronutrients.

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