Clinical Case Reports International

Case Study
Published: 04 Feb, 2021

Celiac Disease, Nutrition, and Children: A Case Study

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Abstract

Celiac disease is one of the most common chronic gastrointestinal disorders in the world. The disease occurs in about 1% of the population. CD is treated with a Gluten-Free Diet (GFD), which leads to resolution of the clinical disease and restoration of the histological abnormalities. This case study includes a 3 years old girl who was suffering from CD which was accompanied by anemia and malabsorption of major nutrients. After the careful clinical and nutrition assessment, gluten free diet along with multivitamin supplements were initiated which resulted in disappearance of her symptoms and improvement in weight gain.

Introduction

Celiac disease is a permanent intolerance to gluten which is a protein present in wheat, rye and barley. It is an inflammatory disease of small intestine which causes malabsorption of major nutrients in genetically susceptible individuals [1].

Celiac disease is one of the most common chronic gastrointestinal disorders in the world. The disease occurs in about 1% of the population. However, it is estimated that 90% of these individuals remain undiagnosed. The dominance of celiac disease in Pakistan is unknown. However, it is felt to be a very common disorder both in children and adults [2].

The manifestations in young children is likely to include the more specific gastrointestinal tract symptoms of diarrhea, steatorrhea, foul smell stools, abdominal bloating, apathy, fatigue, and poor weight gain [3].

Consumption of gluten by genetically predisposed people initiates an uncontrolled T-cell-driven inflammatory response that leads to disruption of the structural and functional integrity of the small bowel mucosa. CD is treated with a Gluten-Free Diet (GFD), which leads to resolution of the clinical disease and restoration of the histological abnormalities [4].

It is well recognized that awareness of celiac disease amongst health professionals is poor and delay in identification of this disease is common. Un-familiar or poorly treated celiac disease can lead to a variety of complications including nutritional deficiencies like anemia and osteoporosis, reproductive disorders, increased risk of developing other autoimmune disorders and intestinal lymphoma. Serological screening of minimally symptomatic patients or those with atypical/non-gastrointestinal complaints can significantly increase the rate of diagnosis of celiac disease [2].

Therefore, it is essential to rule out celiac disease on time based on screening and symptoms to prevent deficiencies of nutrients which can ultimately affect the growth and development of a child.

Case Study

Assessment

Fatima is a 3-year-old girl, living in an urban area of Lahore. Her mother reported that Fatima was experiencing frequent diarrhea from one month and didn't want to eat anything. After continuous treatment, her diarrhea didn't stop and she was losing weight and developed the habit of clay and paint eating. Her weight dropped from - to - in a month and half. She was feeling lethargic and restless all the time. Thorough physical examination showed itchy skin (Dermatitis herpetiformis). Her doctor diagnosed that her diarrhea was because of using tap water which can be a source of *Escherichia coli* and *Shigella* and was causing different GIT symptoms including nausea and abdominal cramps.

Identification of nutrition and dietetic diagnosis

Her dietary assessment revealed that consumption of wheat and wheat products were the main

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Received Date: *29 Dec 2020*
Accepted Date*: 29 Jan 2021*
Published Date*: 04 Feb 2021*

Citation:
Tahir H, Bhatti S, Khursheed T, Jaffar M. Celiac Disease, Nutrition, and Children: A Case Study. Clin Case Rep Int. 2021; 5: 1215.

culprits behind her diarrhea. Lab assessment showed the following results.

Plan and implement nutrition intervention

First goal was to treat her frequent diarrhea. Standard ORS recommended by the World Health Organization and the American Academy of Pediatrics was prescribed which contains a 2% concentration of glucose (20 g/L), 45 to 90 mEq/L of sodium, 20 mEq/L of potassium, and a citrate base. Semi solid diet was initiated. All sources of gluten including wheat, rye and barley were omitted from the diet.

Mother was briefed about all the sources of gluten and their alternatives. She was asked to give Fatima chapatti made from rice or corn flour and was taught to bake bread from these flours. She was instructed to not coat potatoes or other fried products with All-purpose flour or Maida.

A diet plan including all food groups was designed according to the calorie requirement of Fatima. Iron supplement was given to overcome iron deficiency anemia. Her mother was advised to keep an eye on all sources of cross-contamination through which food can get contaminated with gluten products (toasters, cutting boards, knives etc).

Monitor and review

Fatima's symptoms begin to resolve after 2 weeks of initiation of gluten free diet and iron supplement. After one month of following strict gluten free diet her weight increased 2 kg. She started taking interest in daily life activities and was active than before.

Evaluation

Celiac disease is a lifelong condition and it's difficult for parents to keep an eye on the child's food consumption especially during school hours. Junior school students tend to share their food items with each other which can then trigger the onset of symptoms again and again. Parents need to plan their kid's lunch with full consideration of their dietary needs and celiac disease with the consultation of a Registered Dietician. School teachers or administration should be informed about the kid's special requirements and to keep a check on child's food intake. Awareness must be given to parents to read food labels to check any gluten containing ingredient and to order sensibly while dining out.

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