Journal of Gastroenterology, Hepatology and Endoscopy

Case Report
Published: 16 Apr, 2018

Cow's Milk Protein Allergy Presented with Generalized Edema: Case Report and Review of the Literature

*Abduaziz Alharbi[1], Rawan Albelowi[1], Ali Alsharif[2], Emad Alsharif[2] and Mohammed Hasosah[3]**

[1]Department of Pediatric Gastroenterology, Maternity and Children Hospital, Saudi Arabia

[2]Department of Family Medicine, King Saud bin Abdulaziz University for Health Sciences, Saudi Arabia

[3]Department of Pediatric Gastroenterology, King Saud bin Abdulaziz University for Health Sciences, Saudi Arabia

Abstract

Cow's Milk Protein Allergy (CMPA) is the most common food allergy in young children. A 40 days-old boy on regular formula was presented with generalized edema and chronic watery diarrhea since birth. Laboratory data revealed serum albumin at 0.9 g/dL and urine analysis did not reveal proteinuria. Echocardiogram was normal. CMPA was diagnosed based on history and rapid response to amino-acid-based infant formula (Neocate®). At the last follow-up examination at 24 months, he was thriving on a regular diet, with normal growth.

Keywords: Cow's milk protein allergy; Hypoalbuminemia; Watery diarrhea

Introduction

Cow's Milk Protein Allergy (CMPA) is the most common food allergy in infants and young children, with a prevalence of 2% to 3% in the general population [1]. Allergic reactions to cow's milk may be categorized as IgE-mediated, non-IgE-mediated, and mixed types [1,2]. In infancy, there is no definitive means of differentiating IgE- and non-IgE-mediated CMPA, owing to significantly overlapping presentations; however, quick onset symptoms are almost always IgE-mediated [1]. Symptoms and signs of CMPA usually involve skin, gastrointestinal and respiratory tracts. Gastrointestinal tract manifestations of CMPA are nonspecific and the only type that can be diagnosed in all age groups [1]. When diagnosis is delayed, the allergy may impair the growth and quality of life and even be life-threatening [3]. Rarely, CMPA may also present with severe hypoalbuminemia [4,5]. Here, we report unusual presentation of CMPA in a small infant with severe hypoalbuminemia and chronic diarrhea. Review of the literature will be provided.

Case Presentation

A forty days-old boy was admitted to the hospital with chronic diarrhea since birth and generalized edema of the whole body (anasarca). He had watery non-bloody diarrhea four times per day since birth. Her mother noticed that her weight was increased progressively in spite on regular cow's milk formula. There was no history of overfeeding and cardiac symptoms. His prenatal, natal, and postnatal history was not significant. Family history reveled that his sister was allergic to eggs and nuts.

Physical examination revealed pallor and generalized edema (anasarca). Laboratory data revealed a white blood cell count of 10,000/mm^3, hemoglobin at 13 g/dL, MCV at 88 fL, platelets at 405/mm^3 × 103/mm^3, and albumin at 0.9 g/dL. Serum Na, K, urea, creatinine, and alanine-aspartate aminotransferase levels were normal. Hisurinary analysis did not show proteinuria, and the reticulocyte count was normal. The patient's serum folic acid and ferritin levels were normal; anti-gliadin, anti-endomysium, and anti-tissue transglutaminase antibodies were negative. Serum IgA, IgM, IgG, and IgE were normal. Stool analysis, culture, anti-alpha 1 antitrypsin, and elastase were normal. During hospitalization, albumin was administered as an infusion twice per day for one week for serum albumin level to achieve level 2.4 g/dL. However, albumin decreased again and he required another albumin infusion. CMPA was suspected based on history of receiving cow milk and family history of allergy. Fortunately, amino-acid-based infant formula (Neocate®) was started. Within 72 hrs, he showed significant clinical improvement in the form of reduced edema, cessation of diarrhea and no more albumin was transfused as well albumin level became 3.2 g/dL. During outpatient follow-up, he gained 2,000 grams of body weight over the following 30 days. After one month, the serum albumin reached a normal level (3.8 g/dL) spontaneously. At the last follow-up

OPEN ACCESS

Correspondence:
Mohammed Hasosah, Department of Pediatric Gastroenterology, King Saud bin Abdulaziz University for Health Sciences, King Abdullah International Medical Research Center, National Guard Hospital, Jeddah 21482, 8202, Saudi Arabia,
E-mail: hasosah2007@yahoo.com

Received Date: *29 Feb 2018*
Accepted Date: *10 Apr 2018*
Published Date: *16 Apr 2018*

Citation:
Alharbi A, Albelowi R, Alsharif A, Alsharif E, Hasosah M. Cow's Milk Protein Allergy Presented with Generalized Edema: Case Report and Review of the Literature. J Gastroenterol Hepatol Endosc. 2018; 3(1): 1039.

examination at 24 months; he was thriving on a regular diet, with normal growth.

Discussion

Gastrointestinal symptoms of CMPA may be caused by inflammation, dysmotility, or a combination of both [1]. The signs of CMPA include dysphagia, vomiting, regurgitation, dyspepsia, early satiety, anorexia, diarrhea (with or without malabsorption or protein loss due to enteropathy), rectal bleeding, failure to thrive, abdominal pain, severe colic, and persistent constipation that is often accompanied by perianal abnormalities [1,3]. The state of inflammation may result in reduced bioavailability or an excessive loss of nutrients due to the increased intestinal permeability that causes poor growth in children with food allergies [6,7]. Our patient had CMPA accompanied by hypoalbuminemia which is a rare association. Hwang et al. [4] described a number of children with enterocolitis caused by cow's milk, and reported that a failure to gain weight (<10 g/day) and serum hypoalbuminemia (<3.5 g/dL) upon admission are the highest indices of suspicion for CMPA. In addition, rapid reduction in the serum albumin level to <3 g/dL, during follow-up or after admission, may be regarded as an important diagnostic clue [4]. Harikul reported that 4 of their 29 CMA patients had serum albumin of less than 2.5 g/dL. The nutritional status was normal in 38%, while first and second degrees of protein energy malnutrition were observed in 27.6% and 34.4% of patients, respectively [5]. Upon admission, our patient presented a mild degree of protein energy malnutrition and severe hypoalbuminemia caused by the clinical manifestation of edema. The most common causes of edema and hypoalbuminemia were ruled out as she had no loss of protein in urine and stool.

Any diagnosis of CMA must be either confirmed or excluded through an allergen elimination and challenge procedure. Our patient was diagnosed with IgE-mediated CMA from her sIgE and skin prick test results. An oral cow's milk challenge test was planned, but the patient did not attend the follow-up. As soon as the diagnosis was made, she started being fed with amino-acid-based infant formula and breast milk was not stopped, as the mother's diet was reconfigured as a cow's milk proteins-free diet. There was a significant clinical improvement in the patient after a period of one month, and an encouraging decrease in hypoalbuminemia was seen.

The long-term prognosis for the majority of affected infants is generally good, with 80% to 90% naturally acquiring tolerance to cow milk proteins by the age of five [1]. However, recent studies suggest that the natural history of CMPA is changing, with an increasing persistence until later in life and increasing severity of illness [2].

Conclusion

Hypoalbuminemia and anasarca are uncommon presentations of CMPA. CMPA should be kept in mind as a cause, although it is unclear whether the hypoalbuminemia is the result of persistent vomiting or a diet with low protein content. Therefore, the diagnosis of CMPA still has to be based on strict well-defined elimination and milk challenge procedures.

References

1. Koletzko S, Niggemann B, Arato A, Dias JA, Heuschkel R, Husby S, et al. Diagnostic approach and management of cow's-milk protein allergy in infants and children: ESPGHAN GI Committee practical guidelines. J Pediatr Gastroenterol Nutr. 2012;55(2):221-9.
2. Berni Canani R, Nocerino R, Terrin G, Frediani T, Lucarelli S, Cosenza L, et al. Formula selection for management of children with cow's milk allergy influences the rate of acquisition of tolerance: a prospective multicenter study. J Pediatr. 2013;163(3):771-7.
3. Yimyaem P, Chongsrisawat V, Vivatvakin B, Wisedopas N. Gastrointestinal manifestations of cow's milk protein allergy during the first year of life. J Med Assoc Thai. 2003;86(2):116-23.
4. Hwang JB, Lee SH, Kang YN, Kim SP, Suh SI, Kam S. Indexes of suspicion of typical cow's milk protein-induced enterocolitis. J Korean Med Sci. 2007;22(6):993-7.
5. Giovannini M, D'Auria E, Caffarelli C, Verduci E, Barberi S, Indinnimeo L, et al. Nutritional management and follow up of infants and children with food allergy: Italian Society of Pediatric Nutrition/Italian Society of Pediatric Allergy and Immunology Task Force Position Statement. Ital J Pediatr. 2014;40:1.
6. Sampson HA, Aceves S, Bock SA, James J, Jones S, Lang D, et al. Food allergy: A practice parameter update. J Allergy Clin Immunol. 2014;134(5):1016-25.
7. Luyt D, Ball H, Makwana N, Green MR, Bravin K, Nasser SM, et al. BSACI guideline for the diagnosis and management of cow's milk allergy. Clin Exp Allergy. 2014;44(5):642-72.