

Diagnostic Difficulties in Cow's Milk Protein Allergy

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Introduction

Many infants have symptoms that can be attributed to cow's milk consumption. Cow's milk protein allergy is often not considered as a diagnosis because there are no specific diagnostic markers. Patients can be divided into 2 groups according to the response to ingestion of cow's milk: those that clearly present allergy to cow's milk protein and those who have unclear symptoms of some organ systems. Those in the group with cow's milk clear symptoms develop IgE-mediated reaction and they have early symptoms. But they are not the majority. In the absence of other specific methods for diagnostic challenge test is the certainty. Diagnosing a child with an allergy to cow's milk protein is not always easy.

Milk allergy is an abnormal response by the body's immune system to milk and products containing milk. An allergic reaction is developing in minutes to hours after consuming milk. Sign and symptoms are from mild to severe. Signs and symptoms include digestive problems, wheezing, vomiting, and hives. In some cases milk allergy can cause anaphylaxis – a severe clinic manifestation [1,2].

Mechanism

Food allergy is caused by an immune system malfunction. Immune reaction may be immunoglobulin E (IgE) mediated, non-IgE mediated, or mixed. Immune system identifies certain milk protein as harmful triggering the production of IgE antibodies to neutralize the protein. [2] When you come in contact with these protein in second time IgE antibodies recognize them and signal your immune system to release histamine and other chemicals and cause allergic symptoms. Two main proteins in cow's milk can cause an allergic reaction: casein and whey. Children may be allergic to only one milk protein or both [2,3].

There are studies showing that for many of the children with allergy to cow milk protein IgE tests were negative. Some of them show positive IgE tests for cow milk protein over time.

Symptoms

Milk allergy symptoms run from a few minutes to a few hours after drinking milk or eating milk products. Immediately signs and symptoms of a milk allergy include the wheezing, vomiting and hives. These occur from minutes up to 2 hours after food ingestion [3]. Signs and symptoms that may take more time to develop include: diarrhea, loose stools that may contain blood, abdominal cramps, colic, runny nose, coughing or wheezing, and itchy skin rash. Immediate reactions are usually IgE-mediated; while late reactions that may occur even a week after ingestion of dairy products frequently occur through non-IgE immune mechanism [4].

Milk allergy can cause anaphylaxis that can narrow the airways and block breathing. Milk is the third most common food that causes anaphylaxis. Anaphylaxis is a medical emergency and need treatment with epinephrine. Signs and symptoms of anaphylaxis that occur soon

after consuming milk include the following: facial flushing, itching, difficulty breathing, constriction of airways, and shock [2].

Approximately 50-70% of children with cow's milk proteins allergy develop skin disorders such as urticarial, atopic eczema, and angioedema. 50-60% has gastrointestinal manifestations: colic, abdominal pain, vomiting, diarrhea or constipation, occult blood loss, refusal to feed and frequent regurgitation. Only 20-30% has respiratory symptoms including following runny nose, wheezing and chronic coughing [5].

Diagnostic

The first step in diagnosing cow's milk allergy is a detailed medical history and physical examination. The diagnosis of IgE-mediated food allergy is based on the combination of medical history and allergy test such as skin prick test (SPT) and specific IgE. SPT and IgE levels cannot differentiate between sensitization to cow's milk protein and clinical allergy. These results have to be interpreted in the context of clinical history. Children with cow's milk protein allergy with gastrointestinal manifestations have usually specific IgE test negative. Most of those who develop skin disorder have specific IgE positive. Also specific IgE-positive children are at risk of having a longer period of intolerance to cow's milk protein than those with negative tests [1,6,7].

Elimination of cow's milk proteins in the child's diet or in the mother's diet in case of breast-feeding is both a diagnostic and therapeutic method. Diagnostic elimination diet should be applied for a limited period of time. This diet should be instituted both in child with positive IgE and in those with negative IgE. Duration is set according to the type of manifestations. Thus in patients with immediate symptoms cow milk-free diet lasts from 3 to 5 days and may be continued to 1-2 week in those with late clinical manifestation. If after the elimination of cow's milk proteins symptoms do not improve another diagnosis should be sought. In the case of breastfeeding babies' mothers should exclude from their diet all products containing cow's milk protein. The challenge test may be done to confirm the diagnostic but just after elimination diet [2,7,8].

Treatment

First step in management of cow's milk protein allergy is avoidance of allergen. If there are allergies to other foods these also have to be removed from the diet. If the diagnosis of allergy to cow milk protein is confirmed exclusion diet should be instituted for a period of 6 to

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12 months [4,9]. Milk formulas accepted in the diets of those with an allergy to cow's milk proteins include extensively hydrolyzed formula and formula based on free amino acids. Soy protein-based formula is recommended only to those who cannot tolerate other recommended formulas and only in infants older than 6 months [2,10,11].

Duration of exclusion diet is established according to age, severity of symptoms, and the positivity of specific IgE tests. This may last from 3-12 months or even more. If challenge test is positive then the elimination diet is continued [1,4].

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