PREGLED LITERATURE – REVIEW ARTICLE

Update on food allergies

Alergije na hranu – novine

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Summary Food allergy has been defined as adverse reaction to food in which "immunological mechanism have been demonstrated". The clinical presentation of food allergy involves a large spectrum of symptoms ranging from skin like urticaria, angioedema, atopic eczema, dermatitis, gastrointestinal (vomiting, colic, abdominal pain, diarrhea, constipation), respiratory (rhinorrhea, sneezing, cough, dyspnea). According to a recent review the point prevalence of self-reported food allergy is approximately six times higher than challenge food allergy. A proper diagnosis is necessary for a sufficient and safe management. The core stone of diagnosis of food allergy is a careful dietary history. Mostly food allergies are self reported, but also a great number of tests are available. The most widely used tests for food allergies diagnosis are: skin prick tests (SPT), specific IgE (sIgE), component resolved diagnosis (CRD) and the atopy patch test (APT). Besides food avoidance there is also growing interest in the effectiveness of potential immunomodulatory treatment approaches, including sublingual and oral immunotherapy to induce tolerance, particularly for peanut allergy.

Key words: food allergy, urticaria, skin prick test

Sažetak Alergija na hranu je definisana kao imunološki posredovana neželjena reakcija na nutritivne alergene. Klinička slika alergije na hranu uključuje širok spektar simptoma u rasponu od kožnih promena kao što su urtikarija, angioedem, ekcem, dermatitis, zatim gastrointestinalnih (povraćanje, kolika, abdominalni bol, dijareja, konstipacija), respiratornih (rinoreja, kihanje, kašalj, dispneja). Prema nedavnom studija , prevalenca klinički dokazane alergije na hranu je približno šest puta manja nego što je slučaj kada govorimo o alergiji na hranu na osnovu anamenstičkih podataka. Pravilna dijagnoza je neophodna za prevenciju ili eventualno lečenje. Osnovdijagnoze alergije treba da bude kombinacije anamnestičkih padataka, kliničke slike i dobro dijazajniranih dijagnostičkih testova. Najčešće korišćeni testovi za dijagnostiku alergija na hranu su: tskin prick testivi kože (SPT), određivanje nivoa specifičnog IgE (sIgE) na nutritivne alergene , dijagnoza dijagnoze komponenti (CRD) i atopijski test (APT). Osim izbegavanja hrane, postoji sve veće interesovanje za efikasnost pristupa imunomodulatornog tretmana, uključujući sublingvalnu i oralnu imunoterapiju da bi se podstakla tolerancija, posebno kada je u pitanju alergiju na kikiriki.

Ključne reči: alergija na hranu, uricaria, skin prick test,

Introduction

Food allergy has been defined as adverse reaction to food in which "immunological mechanism have been demonstrated". The majority of allergy reaction to foods, particularly n children are suggested to be used primarily by eight foods: cow's milk, egg, wheat, soy, peanut, tree nut, fish and shellfish. (1,2) Food allergy can result in considerable morbidity and mortality as well as the impairment of quality of life. Although all those facts as well as the increasing associated medical costs and a great burden, we are still lacking the exact data regarding the prevalence of food allergies in Europe. It is of a great importance to raise the awareness and access for a proper diagnosis and treatment to ensure a safe and good quality of life. (1,2)

Adverse reaction to foods encompasses many different reaction and clinical symptoms. with different mechanism those mechanisms includes toxic, enzymatic and hypersensitive reactions. "Food allergy" is only one subgroup of those adverse reaction to foods driven by immunological mechanisms that can be IgE or non-IgE mediated. (1-3)

The aim of this review article is to give insight into a novelties in clinical presentation, epidemiology, diagnosis of food allergy and management.

Materials and methods

A complete search of the Cochrane Central Register of Controlled Trials (CENTRAL) in the Cochrane Library, MEDLINE and Pub Med up to January 2019 was carried out with following key words: food allergy, urticaria, skin prick test, atopy patch test

Epidemiology

Although those reaction are reported mostly in ER services, if we investigate a real cause of those symptoms we would fail to diagnose food allergy. According to a recent review the point prevalence of self-reported food allergy is approximately six times higher than challenge food allergy. (1-4) Presence of allergen-specific IgE indicates sensitization, wheres a clinical allergic reaction can be proven only by oral food challenges. Allergic reaction to food might have serious consequences and results in considerable morbidity and in some instances results in life threatening anaphylaxis. The prevalence of food allergy in children was generally higher then the prevalence in adults. It is also very interesting to point out that the prevalence of primary food allergy is stable over the time while the prevalence of secondary food allergy caused by cross reactions to food allergens with inhalant allergies appears to be increasing. (5-9)

Clinical presentation

The clinical presentation of food allergy involves a large spectrum of symptoms ranging from skin like urticaria, angioedema, atopic eczema ,dermatitis, gastrointestinal (vomiting, colic, abdominal pain, diarrhea, constipation), respiratory (rhinorrhea, sneezing, cough, dyspnea). The reaction can be triggered by food ingestion, inhalation and skin contact sometimes in a very small amounts. (10)

Diagnosis of food allergy

A proper diagnosis is necessary for a sufficient and safe management. The core stone of diagnosis of food allergy is a careful dietary history. Mostly food allergies are self reported, but also a great number of tests are available. The most widely used tests for food allergies diagnosis are: skin prick tests (SPT), specific IgE (sIgE), component resolved diagnosis (CRD) and the atopy patch test (APT).

In vivo SPT (skin prick test) is not always accurate to diagnose food allergy. Elimination diet for diagnostic purposes or oral food challenges tests are still required for both types of food allergies. For some clinical manifestation like food induced entheropaties, endoscopy and biopsy are needed to establish the right diagnosis. SPT can be undertaken at any age although reactivity is lower in infants and possibly in elderly. In case where extracts are not available for example for most fruits and vegetables fresh food should be used. These test can be performed on forearm or at the back by professionals who can interpret both the results either handle possible adverse events. Negative control (saline 0.9%) and positive histamine 10mg/ml control are required. The maximum wheal diameter is reported with an arbitrary positive cut off 3mm after 15 minutes. High quality performance of skin prick test can be seen for following allerges: peanut, egg, milk, hazelnut, shripms, but less for soy and wheat. For plant derived vegetables such as carrots, celery, kiwi, lupine, maize and melons or animal derived food those tests are not so sensitive. Elimination diet for diagnostic purposes consists of the avoidance of certain food for two-four weeks for IgE mediated allergies and no longer then 6 weeks for non IgE mediated allergies. In some cases it is not easy to perform testing and potential cofactors shouldn't be overlooked. For example for cow milk allergy it is not enough only to include hydrolyzate formula but also to take in consideration amino acid formulas. After elimination period reintroduction should be started gradually. (11,12)

Oral food challenge

OFC (Oral food challenge) is usually needed to confirm the diagnosis of food allergy, to monitor food allergy or to prove oral tolerance to a given food. In order to avoid severe reaction, patients receive the food in titrated doses with half logarithmic dose increments, at set intervals. For many food such as cow's milk, hen's egg, peanut or tree nut dose range from 3mg to 3g of food protein. Immediate reaction usually appear within 2 hours after the last food intake. Atopic dermatitis can be occurred several hours after the test ,whereas late reaction can be observed even several weeks after the provocation. (13)

Diagnostic workup of gastrointestinal non-IgE mediated symptoms

Infants in the first year of life can suffered from gastrointestinal clinical manifestation such as enterocolitis syndrome, proctitis and enteropathy related to non IgE mediated food allergies. The diagnosis is based on clinical history, elimination diet for three weeks and special designed OFCs. Endoscopy with biopsies can be helpful to confirm bowel inflammation. Eosinophilic esophagitis (EoE) is defined as chronic, immune/antigen mediated esophageal disease characterized by symptoms of esophageal disfunction and histological eosinophilic infiltration in biopsies. Clinical manifestation in adults include dysphagia, retrosternal pain and food bolus impaction. Whereas in children is much more variable and includes failure to thrive, vomiting, regurgitation, thoracic and abdominal pain. (8)

Unconventional tests

It is a very common among physicians to prescribe a number of expensive diagnostic tests and alternative approaches to the patients with suspected allergies. Bioresonance, kinesiology, iridology, hair analysis, cytotoxic

tests and IgG and IgG4 determination. These tests are not valid and are not recommended by European Academy for Allergy and Clinical Immunology (EAACI) . IgG and IG4 diagnostic tests are most commonly used but they can show only that a person was exposed to a high doses of allergens, that are recognized by immune system as a foreign protein. (14)

Management of food allergy

People with food allergies are often advised to completely avoid allergenic certain food. In case of acute reaction H1-antihistamines are the most common drugs that have been prescribed. Regarding the long term management they are mixed findings about mast cells stabilizers used prophylactically for food allergy symptoms.
Due to a good prognosis of many food allergies in terms of spontaneous resolution, particularly in children, re-challenges are recommended regularly. In that way we can check the development of tolerance. Studies on possible prevention of development of food allergies have shown that simple dietary measurement in infancy can reduce the risk for food allergies. The only safe approach is identification and avoidance of the offending food. Education of the patients, families and health care professionals and others in network around the patient on how to avoid ingesting the food and how to recognize and manage allergic reaction is of a great importance. It is also a very important to consult health care professionals specialized in nutrition to make a optimal nutritional balanced diet to compensate the exclusion of certain food. (15-20)
There is also growing interest in the effectiveness of potential immunomodulatory treatment approaches, including sublingual and oral immunotherapy to induce tolerance, particularly for peanut allergy. (21-24)

Vaccine and food allergy

Live Attenuated Influenza Vaccine (LAIV)at the first place MMR (measles, mumps and rubela) contains very small amounts of egg protein and until recently, has been contraindicated in children with egg allergy. Studies have looked at the safety of the LAIV vaccine in children with egg allergy. 1212 doses in total were given to 2-17 year olds. Only 16 children (1.3%) of the children in the 2 studies had mild allergic symptoms, such as urticarial rashes and rhino-conjunctivitis; no children had signs or symptoms of anaphylaxis (25,26). The national UK guidance recommends that all children 2-17 years of age should be offered annual immunization with LAIV. Only in case if children were presented with severe asthma (BTS 4+), active wheezing, or egg allergy which has previously resulted in an intensive care requirement should not be given the vaccine (27).

Conclusion

1. Recommendation for primary prevention - recommendations for all infants:
   - ➢ No special diet during pregnancy or for the lactating mother
   - ➢ Exclusively breastfeeding for 4-6 months
2. Further recommendation for infants with atopic predisposition:
   - ➢ If supplement is needed during the first 4 months a documented hypoallergenic formula is recommended
   - ➢ Introduction of complementary foods after the age of 4 months according to normal standard weaning practices and nutrition recommendations, for all children irrespective of atopic hereditary.

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