



Does bee pollen cause to eosinophilic gastroenteropathy?

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Abstract

Bee pollen is given to children by mothers in order to strengthen their immune systems. There are no studies related with the side effects of bee pollen in the literature. In this article, the literature was reviewed by presenting a case of allergic eosinophilic gastropathy related with bee pollen. A 5-year old child was admitted due to abdominal pain. Edema was detected on the eyelids and pretibial region. In laboratory investigations, pathology was not detected in terms of hepatic and renal causes that would explain the protein loss of the patient diagnosed with hypoproteinemia and hypoalbuminemia. Urticaria was detected during the follow-up visit. When the history of the patient was deepened, it was learned that bee pollen was given to the patient every day. The total eosinophil count was found to be 1 800/mm³. Allergic gastroenteropathy was considered because of hypereosinophilia and severe abdominal pain and endoscopy was performed. Biopsy revealed abundant eosinophils in the whole gastric mucosa. A diagnosis of allergic eosinophilic gastropathy was made. Bee pollen was discontinued. Abdominal pain and edema disappeared in five days. Four weeks later, the levels of serum albumin and total eosinophil returned to normal. (Turk Pediatri Ars 2015; 50: 189-92)

Keywords: Bee pollen, eosinophilic gastroenteropathy, good allergy

Introduction

Food allergy (FA) is an important problem which is observed commonly in the childhood and manifested by different clinical findings (1). The majority of the clinical findings which generally develop in the early childhood are IgE-mediated. IgE-mediated reactions may involve the skin, gastrointestinal (GI) system and respiratory system. Signs appear in a short time after exposure to allergen. However, mixed type food allergies include both IgE-mediated and cell mediated mechanisms and clinical findings (eosinophilic esophagitis, eosinophilic gastritis, eosinophilic gastroenteritis) generally occur within a certain time after consumption of food (1, 2). Currently, substances including bee pollen, honey and royal jelly are given to children by their mothers with the objectives of protection from infectious and allergic diseases, increasing appetite and strengthening the body. Use of these types of substances with the above mentioned objectives is gradually increasing, but there

are no studies related with this subject in the literature. In contrast, there are many case reports reporting that these types of substances lead to anaphylaxis, urticaria, asthma, abdominal pain, diarrhea and pruritus (3-8). The relation between bee pollen and allergic eosinophilic gastropathy has been reported in the literature, though rarely (6). In this article, a case of allergic eosinophilic gastropathy causing to a picture of protein losing enteropathy related with bee pollen is presented and the literature is reviewed.

Case

A five-year old male patient presented with complaints of abdominal pain which had been lasting for one week, vomiting and swelling in the eyelids and legs which started three days ago. In the history, it was learned that he had constipation since infancy and he defecated every day but with difficulty. His personal and familial history were insignificant.

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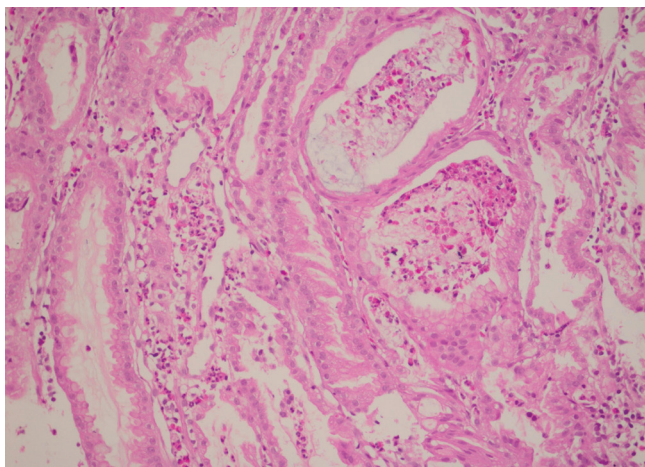


Figure 1. Edema and congestion in the gastric mucosa, abundant eosinophils in the tunica propria and on the surface

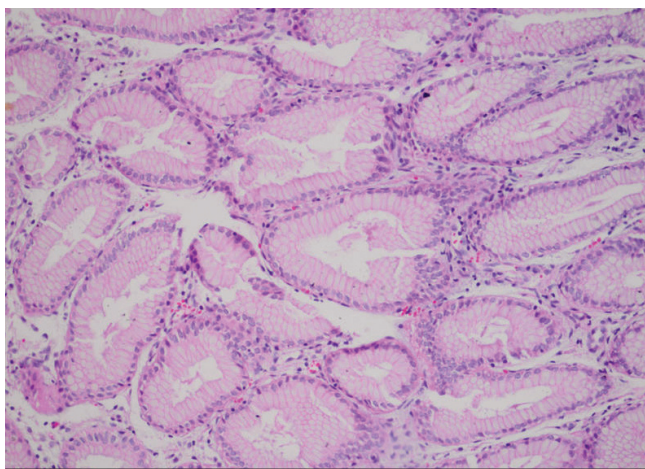


Figure 2. Marked regression in extensive eosinophilia and congestion in the gastric mucosa

Physical examination findings were as follows: body weight: 17 kg (50 p), height: 107 cm (50 p), apical heart beat: 82/min, blood pressure: 100-80 mmHg, general status: well, consciousness: open, cooperated, oriented, mild periorbital and pretibial edema. Examination of the other systems was found to be normal.

Laboratory findings were as follows: Complete blood count: hemoglobin: 14.1 g/dL, WBC: 14 800/mm³, platelets: 510 000/mm³, total eosinophil count: 1 800 /mm³. The percentage of eosinophils was found to be 12% on peripheral smear. Renal function tests, sodium, potassium, liver enzymes and complement 3 and 4 levels were found to be normal. The other laboratory tests were as follows: total protein: 2.97g/dL (low), albumin: 1.94 g/dL (low), calcium: 8.34 mg/dL, IgG: 213 mg/dL (345-1236), Ig A: 60 mg/dL (14-139), IgM: 114 mg/dL (43-207), IgE: 335 IU/mL.

Nephrotic syndrome was considered, since total protein and albumin was found to be low, however, lack of proteinuria in complete urinalysis and in 24-hour urine excluded this diagnosis. Parasites or occult blood were not found on repeated stool examination. Considering that decreased albumin level might be caused by hepatic pathology, liver functions tests were performed and the hepatic parenchyma was evaluated by abdominal ultrasonography and observed to be normal. There was no diarrhea in the history and the patient had chronic constipation in contrast. Therefore, protein losing enteropathy was not considered initially.

Short-term urticarial rash occurred while the patient was being followed up. When nutritional history was taken from the mother once again, it was learned that the patient was given a product called bee pollen each day by adding into a spoon of milk. In the follow-up, it was observed that the abdominal circumference increased. On repeated ultrasonography, moderate ascites was observed. Pediatric gastroenterology was consulted considering allergic gastroenteropathy because of a neutrophil count of 1 800/mm³ and severe abdominal pain. Pediatric gastroenterology performed upper gastrointestinal endoscopy. Upper gastrointestinal endoscopy revealed edema and hyperemia prominent in the whole gastric mucosa, fragility especially in the antrum, prepyloric antrum and corpus, marked hypertrophy in the corpus pili (thicker than 5 mm), old and new blood residues in the lumen, nodular appearance in the antrum and hyperemia in the antrum and duodenum. On histopathological examination, edema and congestion was found in the gastric mucosa of the fundus and abundant eosinophils were found in the tunica propria and on the surface (Figure 1). A diagnosis of allergic gastropathy was made as a result of clinical, biochemical and histopathological examinations.

Skin prick tests were performed with food allergens (milk, egg, egg white, cacao, wheat, nut, peanut, banana, orange, tomato, peach, fish, chicken meat, soya) and found to be negative. Patch test with bee pollen was performed in terms of possible late type reaction and found to be negative. Ingestion of pollen was discontinued and abdominal pain and edema which started to regress in five days disappeared completely after two weeks. Serum albumin, calcium, total eosinophil levels returned to normal on the follow-up visit after four weeks. On follow-up upper gastrointestinal endoscopy, sparsely dotted hyperemia was observed in the whole gastric mucosa and the general appearance was found to be normal. On histopathological examination, it was observed that the congestion in the gastric mucosa of

the fundus and intensive eosinophilia in the tunica propria were markedly regressed (Figure 2).

Discussion

Consumption of substances like bee pollen has increased gradually in recent years. There are no studies related with the adverse effects of these substances. When the literature is reviewed, it is observed that there are case reports indicating that these substances lead to side effects including urticaria, bronchospasm, severe abdominal pain, anaphylaxis, hypereosinophilia, eosinophilic gastropathy and neurological findings and increase atopic sensitivity (3-8). We think that edema, hypoproteinemia and allergic eosinophilic gastropathy developed in our patient as a result of consumption of bee pollen.

Food allergies are divided into three classes including IgE-mediated, non-IgE mediated and mixed type in which both mechanisms are involved. Food allergies may lead to a wide spectrum of symptoms. The clinical picture may range from chronic nonspecific GI system findings to severe anaphylaxis picture. The common type of food allergy is in the form of type 1 reaction which is IgE mediated. IgE mediated reactions may cause to symptoms including urticaria, oral allergy syndrome, anaphylaxis, angioedema, acute rhinoconjunctivitis, acute bronchospasm and usually develop in minutes (1, 2).

Mixed type food allergies in which both IgE mediated and cell mediated mechanisms are involved usually cause late-onset reactions and may become symptomatic days after exposure to the responsible agent. Atopic dermatitis, contact dermatitis, eosinophilic gastropathy and eosinophilic esophagitis may develop due to mixed type food allergies (1). The symptoms of mixed type food allergies (eosinophilic esophagitis, eosinophilic gastritis, eosinophilic gastroenteritis) start late and not right after exposure. Therefore, it is difficult to associate the symptoms with diet (9).

Allergic eosinophilic gastropathy is a disease characterized with eosinophilic infiltration of the different parts and layers of the gastrointestinal tract (9). It is observed substantially rarely in the childhood compared to adults. It causes problems, including abdominal pain, diarrhea, melena, vomiting, weight loss, iron deficiency anemia and protein losing enteropathy. Eosinophilic infiltration is prominent histopathologically. The main complaints of our patient included vomiting and ab-

dominal pain. However, our patient had constipation in contrast to diarrhea which is generally observed in this clinical picture. Since eosinophilic infiltration may be observed in many conditions including gastroesophageal reflux disease, parasitic contamination and inflammatory bowel disease, the diagnosis of eosinophilic gastropathy should be considered after the other possibilities are excluded (9, 10). The diagnostic criteria of eosinophilic gastroenteritis include gastrointestinal symptoms, eosinophilic infiltration in one or more areas which can be demonstrated by biopsy, absence of any involvement outside the gastrointestinal tract and absence of parasitic contamination (9, 10). There is no atopic history in approximately half of the patients (10). Frequently, there is a strong familial history of food allergy. Although eosinophilia in the peripheral blood is an important variable suggesting the diagnosis, it is not found in approximately 20% of the patients. Therefore, it is not considered as a diagnostic criterion (11). Since a history of food intolerance and atopy can not be proved objectively in most of the patients, they are not mandatory for the diagnosis. Hence, skin prick tests and food specific IgE levels are found to be normal in approximately half of the patients (10). In our patient, hypoproteinemia and eosinophilia were found in addition to the complaints including abdominal pain, vomiting and constipation. A diagnosis of eosinophilic gastropathy was made as a result of GI endoscopy and biopsy examination.

Double-blind placebo controlled food provocation test which is gold standard in IgE mediated food allergy is not used in the diagnosis of allergic eosinophilic gastropathy. Skin prick tests, atopy patch tests, serum food specific IgE levels may be useful for the diagnosis (1). The basis of treatment is elimination of the culprit food. In addition, response of the patient to the elimination diet is substantially significant. However, oral steroid may be needed in some patients (11). In our patient, oral steroid was not administered, because the clinical picture improved after elimination of bee pollen.

The active ingredients contained in the products which are used with different objectives including bee pollen, the amounts of these active ingredients, at what doses they should be used and what kind of effects and side effects they lead to are not known exactly. The substances contained in these products recommended without support of medical research may lead to toxic effects as observed in our patient. In conditions which can not be explained clinically, administration of different drugs and substances should be questioned.

Informed Consent: Written informed consent was obtained from the parent of the patient who participated in this study.

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