

Eosinophilic esophagitis and immunoglobulin E-mediated food allergy

Dear Editor,

Food allergy (FA) is an adverse reaction to a specific food antigen—normally harmless to the healthy population—which is mediated by immunological mechanisms and arises in an individual susceptible to that particular allergen.¹ FA is a public health problem affecting children and adults, and its prevalence has been increasing over the past decades.^{2,3} In addition to immunoglobulin E (IgE)-mediated FA (IgE-FA), there is growing recognition of cell-mediated disorders such as eosinophilic esophagitis (EoE).³ EoE is characterised by symptoms of esophageal dysfunction in children and adults. However, in children, the symptoms are similar to those of gastroesophageal reflux or swallowing disorders. Additionally, EoE in children and adults present at least 15 eosinophils/high-power field (eos/HPF) on esophageal biopsies, in the absence of other causes of esophageal eosinophilia.⁴

It has recently been described that the syndrome of food-induced immediate response of the esophagus (FIRE) in adult patients with EoE consists of severe pain for several hours, together with unpleasant retrosternal pressure, just after contact of food with the esophageal mucosa.^{5,6}

Pollen food allergy syndrome (PFAS) consists of IgE-FA to pollen and multiple foods that cross-react. PFAS starts in seconds or 1–2 minutes after food intake with oropharyngeal pruritus, tight throat, difficulty swallowing, dysphonia, and nasal and ear itching.⁷

In EoE, PFAS has yet to be evaluated. To our knowledge, no study has assessed the presence of FIRE or both FIRE and PFAS in children or patients with esophageal diseases without EoE. This paper's objectives are to study patients with EoE: (1) the prevalence of FIRE, PFAS, and both FIRE and PFAS; (2) the differences between patients with FIRE with and without EoE; and (3) the presence of FIRE in esophageal diseases other than EoE.

This is a prospective observational and analytical study that included patients evaluated from 2007–2020 in the Allergy Service of a university hospital located in the mid-south of Spain.

Following current consensus guidelines, patients were diagnosed with EoE and FIRE in our study. We performed skin prick tests in all patients, with aeroallergens battery (mites, pollens, fungi and epithelium of cats and dog), and food battery (milk,

egg, wheat, lentil, nuts and fish/seafood), with the food implicated.

Patients were diagnosed with IgE-FA when allergic symptoms occurred “immediately” after ingestion of a relevant food allergen, and they were sensitised to the same item.

Variables and features of patients studied included epidemiological data (prevalence of FIRE, PFAS and both), demographics, symptoms, comorbidities, sensitisation to allergens, endoscopic phenotype, histological study (eos/HPF) and adherence and response to treatment.

We obtained informed consent in writing from the patients/guardians. The Clinical Research Committee of our hospital approved this study.

The SPSS Statistics software version 26 (IBM Corp, Armonk, US) was used. Categorical variables were described with percentages; 2 groups were compared using the chi-square test for categorical variables and Mann Whitney test for continuous variables. Confidence intervals of 95% were estimated.

A total of 386 patients were diagnosed with EoE from 2007 to 2020. The mean age was 35 years; 11% were <14 years. Most (75%) were male. Of the patients, 83.5% were atopic, 82% had a respiratory allergy, 11% atopic dermatitis and 29% a food allergy. The time of evolution of the symptoms until the diagnosis was 6 years and 8 months. Eighty seven percent had dysphagia, 27% had impactions, and 12.5% had other signs of esophageal dysfunction. Of 122 patients with EoE and FA, about 25% were sensitised to profilin and 25% to lipid transporting lipoprotein (LTP). The prevalence of PFAS in patients with EoE and FA was about 16%, and of FIRE was 36%. We detected 3 patients with FIRE without EoE who were 9, 10 and 12 years old, and 4 patients with esophageal disease in EoE (3 patients with gastroesophageal reflux disease and 1 patient with Schatzki ring) (Fig. 1). Overall, we did not find significant differences in multiple features studied between the patients with EoE (with or without FIRE) (Fig. 1).

Discussion. One evidence that EoE is a food-mediated allergic disease is that almost all patients responded to an elemental diet. Many reacted to a diet in which dairy, wheat, eggs, and soy were eliminated; food-specific IgE and Th2 cells are consistent with a loss of tolerance to trigger foods. Many patients have concomitant IgE-

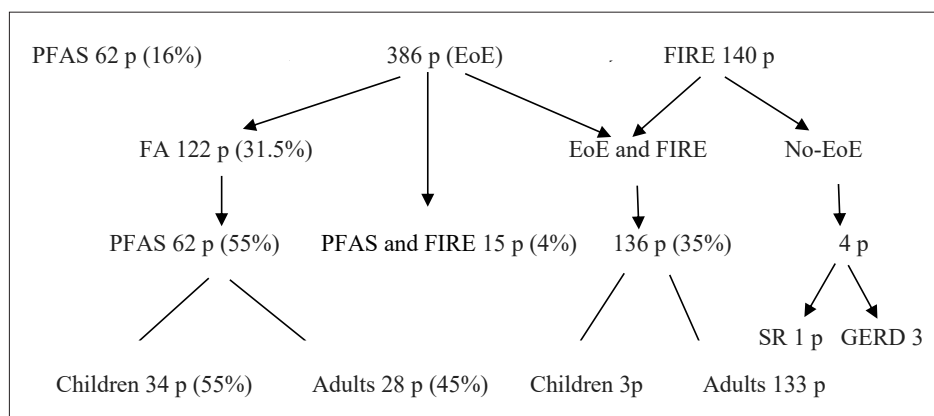


Fig. 1. Patients with EoE and PFAS, with FA and EoE, with EoE and FIRE, with EoE, FIRE, and PFAS, and with FIRE without EoE. EoE: eosinophilic esophagitis; FA: food allergy; FIRE: food-induced immediate response of the esophagus; GERD: gastroesophageal reflux disease; p: patients; PFAS: pollen food allergy syndrome; SR: Schatzki ring

mediated food allergy and other allergic comorbidities in our series of patients.⁸ The prevalence of IgE-FA and EoE is 31.5%; however, in one study, only the paediatric population amounted to 56.9%.⁹

In this study, the prevalence of PFAS is lower (16%) than that found by other researchers (26%),¹⁰ which could be explained by different aerobiology in the regions where the study was carried out. About a quarter of the patients were sensitised to panallergens such as profilin and LTP. Also, the prevalence of FIRE in our patients (children and adults) is lower (36%) than that reported by other studies on only adult patients. It has yet to be studied if FIRE is exclusive to EoE and adult patients.⁵ In our study, the concurrence of FIRE and PFAS is low (4%) in patients with EoE. We detected FIRE in 3 atopic children >8 years. They needed to go to the emergency room due to intense pressure in the chest that prevented them from breathing normally 5 minutes after the start of eating (melon and pineapple). The Allergology Service ruled out IgE-FA alertness, and they were later diagnosed with EoE. We have also evaluated patients with non-EoE esophageal pathology but with FIRE. We have not found significant differences between the patients with EoE (with and without FIRE) in multiple features studied. Therefore, the patients with EoE (with or without FIRE) are similar.

FIRE and PFAS are 2 types of local FA with symptoms at the esophagus and oropharynx, but different mechanisms trigger them.

In conclusion, in EoE, one-third of patients can have FIRE; one-fifth can have PFAS, but the concurrence of PFAS and FIRE is low. For the first time, we can say that FIRE is a response of the esophagus not exclusive to EoE or adult patients. The presence or absence of FIRE does not influence EoE.

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