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A very unusual case of food allergy, between FPIES and IgE-mediated food allergy

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KEY WORDS

Diagnosis; egg; food protein induced enterocolitis syndrome; IgE-mediated food allergy

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Summary

Food protein induced enterocolitis syndrome (FPIES) is a food-related gastrointestinal hypersensitivity disorder, probably non-IgE-mediated. Over the years, various diagnostic criteria have been proposed to identify FPIES. In the last few years, there was an increased interest from researchers about FPIES's syndrome, that frequently brought to discover new aspects of this disease. We describe an unusual case of FPIES to egg in a 21-months-old child, because of its clinical characteristics that reflect some aspects of IgE-mediated allergy and other of non IgE-mediated allergy. Although we believe that the most correct diagnosis for our case is FPIES, we think also that this is undoubtedly an atypical form. This is in fact, the first description of a patient who simultaneously has both clinical expressions of IgE-mediated FA that of FPIES. Our case highlights the need to review criteria for FPIES diagnosis.

Introduction

Food protein induced enterocolitis syndrome (FPIES) is a food-related gastrointestinal hypersensitivity disorder, probably non-IgE-mediated. Symptoms of the acute form include projectile and repetitive vomiting, diarrhea, lethargy, and, in more severe cases, also dehydration, hypotension, and shock. Symptoms usually occur between 1-4 hours from ingestion of the guilty food (1). Over the years, they have been proposed several diagnostic criteria to identify FPIES (1-5). There are some differences among these, probably due to the lack of established validations of proposed criteria. Moreover, interest from researchers brought to discover new aspects of this disease. For example, recently a case of FPIES to mushrooms was published (6), it was unusual because the first episode occurred in a 7-year-old girl. The authors highlight the need to revise the current diagnostic criteria of FPIES which currently provide that the age of the first episode is no more than two years.

We describe a case of FPIES to egg, also unusual because of its clinical characteristics that reflect some aspects of IgE-mediated allergy and others of non IgE-mediated allergy. Also, our case highlights the need to review criteria for FPIES diagnosis. In particular, we consider appropriate to delete the criterion "absence of symptoms that may suggest an IgE-mediated reaction".

Case report

A 21-months-old child was conducted to our ambulatory for evaluation of a suspected egg allergy. At the age of 10 months, he ate a teaspoon of raw egg mixed with hot soup and soon after he went to sleep. About two hours later, his grandmother heard him complain and she noticed some wheals of urticaria on the face of the baby that increased in few minutes. The child presented also a single vomiting and appeared moderately lethargic and pale. One month before, he had eaten twice the yolk of

a boiled (for 10 minutes) egg without adverse reactions. Since then, the child has no longer eaten egg.

We performed skin prick test (SPT) and results were the following: raw egg (mixed albumen and yolk) = 6 mm (mean wheal diameter), boiled egg albumen = negative, boiled egg yolk = negative, baked egg (muffin) = negative, commercial extract of egg albumen (Lofarma, Italy) = 3 mm (mean wheal diameter), commercial extract of egg yolk (Lofarma, Italy) = negative. After a week, the child performed an OFC with baked egg (muffin). He ate 50 grams of muffins (containing 1.5 grams of egg protein) and three hours later showed repeated and projectile vomiting, mild pallor and lethargy. Symptoms resolved spontaneously within 2 hours. The same day, before the OFC, a rub test with raw egg was performed on the skin of the face and back of the child and, after 20 minutes from the beginning of the test, small wheals of urticaria, rash and itching appeared and increased progressively in about 10 minutes.

Four weeks later, because of the positive result of SPT and rub test with raw egg, the child performed an OFC with raw egg to establish the possibility of an IgE-mediated allergy to this food. SPT with raw egg performed the same day of the OFC resulted again positive (mean wheal diameter = 5 mm), while rub test with raw egg was negative. Patient gradually assumed a half of a raw egg, according to the methodology of the OFC for IgE-mediated FA, as suggested (7). Two hours after the ingestion of the first dose (and 20 minutes after the ingestion of the last dose) he presented a vomit without pallor and without lethargy. 0.2 mg/kg of ondansetron were administered intramuscularly. Nevertheless, the child presented other episodes of vomiting (overall 5 episodes), associated to pallor and lethargy. Blood pressure was always normal. After 4 hours from the beginning of symptoms, the child was fine.

Discussion

We think that this case is an unusual clinical expression of a single FA based on mixed mechanism, IgE and non-IgE-mediated. The characteristics that suggest an IgE-mediated FA are: a) the urticaria after the ingestion of raw egg at the age of 10 months; b) the positivity of SPT with raw egg; c) the positivity of the first rub test. Instead, the following are characteristics that suggest a non-IgE-mediated mechanism: a) onset of symptoms 2-3 hours later the ingestion of half-hard egg at the age of 10 months and during the OFC with muffin; b) the failure of muffin OFC (the egg thus processed is usually tolerated by those patients who have an IgE-mediated egg allergy); c) the absence of urticaria during the OFC with raw egg; d) the negativity of the second rub test with raw egg. Of course, it is strange that the rub test was negative the second time and we do not know how to explain it. We believe a false negative possible (the second time), for example due to an inaccurate execution, while we consider

a false positive unlikely (the first time). We do not have a sIgE profile at molecular level in our patient. Some authors (8-11) have measured the sIgE specific to ovomucoid, in order to identify a cut-off value with positive predictive value > 95% in predicting adverse reaction during OFC with baked egg, reporting very variable values (from 3.3 kU/L to 50 kU/L).

Although we believe that the most correct diagnosis for our case is FPIES, we also think that this is undoubtedly a very atypical form. Cases of FPIES shifted to an IgE-mediated FA (12) and cases of IgE-mediated FA shifted to FPIES have already been described (13), but to our knowledge this is the first description of a patient who simultaneously has both IgE-mediated FA and FPIES clinical expressions. Like that of Serafini et al (6), also our case highlights the need to review criteria for FPIES diagnosis. In particular, we consider appropriate to delete the criterion "absence of symptoms that may suggest an IgE-mediated reaction". The OFC with raw egg raised some doubts in us. We have gradually performed it, according to the methodology of IgE-mediated allergy, as suggested by guidelines (7). On that occasion, the child began to vomit two hours later the ingestion of the first dose and 20 minutes later the ingestion of the last dose. What will have been the dose responsible for symptoms? If the first dose was responsible, the reaction was compatible with FPIES, while if the last dose was responsible, the reaction was compatible with an IgE-mediated FA.

Finally, our case represents the first description of a therapeutic failure of the intramuscular ondansetron in controlling vomiting during OFC performed for FPIES.

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