Managing food allergy immunotherapy in children during the COVID-19 pandemic

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Abstract

Food allergy immunotherapy is a promising allergen-specific approach to manage food allergy in children, although it is not exempt from adverse events, even severe. The adverse events are not predictable and furthermore cofactors can play a role in triggering them. During the COVID-19 pandemic, patients on food allergy immunotherapy should be provided with suggestions on how to proceed in the event of COVID-19 infection occurring or is suspected. These recommendations would be of support to clinical practitioners dealing with patients on food allergy immunotherapy since there is little data in the literature on the topic.

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KEYWORDS
children; COVID-19; food allergy; oral immunotherapy

Introduction

The Coronavirus Disease-19 (COVID-19) outbreak was declared a pandemic by the World Health Organization in March 2020. This unprecedented situation presents a unique challenge for patients with IgE-mediated food allergy, including those on oral food allergy (FA)-immunotherapy (IT). The aim of this paper is to share our experience in managing FA-IT during the COVID-19 pandemic, supporting patients who are undergoing this treatment and their families. It has been shown that specific allergen IT does not cause any systemic immunodeficiency that would increase the risk of COVID-19 infection. As a matter of fact, IT induces an immunological mechanism in the target antigen/allergen-specific T and B cells that does not promote viral infections. FA-IT is a promising allergen-specific approach of FA management that consists in assuming progressively increasing amounts of the culprit food until a daily maintenance dose is reached. Afterwards, the patient should take it at home on a regular basis. The daily intake of the maintenance dose is mandatory to attain the state of desensitization in which the patient is able to consume the offending food safely. However, oral FA-IT is hampered by adverse events (AEs), the majority of which are mild and self-limiting, but systemic allergic reactions with the necessity to administer intramuscular epinephrine can occur as well. Moreover, the occurrence of AEs during the maintenance phase is possible, even with doses previously well tolerated for weeks or months. They are unpredictable, and cofactors, such as intercurrent viral
infections, exercise, and teething in children\(^9\) can play a role as a trigger as well. Other cofactors which contribute to eliciting AEs during IT are poorly controlled asthma, seasonal pollen allergy, and consumption of the food dose on empty stomach.\(^4\) Furthermore, it must be considered that food-related anxiety, especially during the COVID-19 pandemic, may be increased by the fear of possible AEs. For that reason, it is paramount to minimize the possibility of provoking severe reactions which would require hospital setting care with the consequent risk of being infected by the Severe Acute Respiratory Syndrome-Coronavirus-2 (SARS-CoV-2). The recommendations for the management of an acute anaphylaxis episode at home during the COVID-19 pandemic have been outlined by experts’ opinion.\(^2\)

Additionally, the patient must be provided with an emergency action plan, including epinephrine auto-injector.\(^2\) It has been established that the commonly prescribed anti-allergic drugs such as antihistamines and bronchodilators do not increase the risk of acquiring SARS-CoV-2 infection,\(^10\) and neither do oral steroids to treat an asthma attack.\(^11\)\(^12\)

At the same time, it would be essential not to interrupt an already ongoing oral FA-IT in order to avoid compromising the effect of the desensitization that has already been achieved. This aspect could be challenging to obtain, if the parents of patients under IT have been infected by SARS-CoV-2. For this reason, they would not be able to take care of their children, or give the maintenance dose, and they would be obligated to delegate other caregivers who are not trained to cope with possible allergic reactions. Therefore, it is easier to stop the FA-IT than to continue it. Due to the significant emotional impact that families have to bear in this particular situation, our hospital has set up a psychological service, through telemedicine, for their daily support.

Additionally, the COVID-19 pandemic has also had some positive aspects as experienced by our allergic children’s families. For instance, since the children are confined in quarantine, the risk of catching a viral infection is very low and, as a consequence, the threat of AEs triggered by infection is reduced; by not doing sports on a regular basis, the children are able to take the maintenance dose every day without the risk of exercise\(^8\) as a trigger factor. In addition, the possibility of contamination (direct and indirect)\(^13\) during meal preparation is minimal as meals are prepared by the parents and consumed at home. The same risk is reduced also because the children do not participate in social events such as parties. Spending more time with their children, parents are trained to treat any eventual allergic reactions better than other relatives. Lastly, in case of reactions parents can easily reach the emergency department because of the lockdown.

Since there is little data in the literature on oral FA-IT, our recommendations, resulting from our clinical practice, may change based on new pieces of scientific evidence. For this reason, they should be continuously revised with knowledge of new information about COVID-19.

**Recommendations for non-infected patients during the COVID-19 pandemic**

Interrupting oral FA-IT is not advised. Oral FA-IT should be continued during the COVID-19 pandemic in patients with negative test results [real time-polymerase chain reaction (RT-PCR)].

If the patient does not present allergic symptoms with the maintenance dose at home, it is recommended to continue the consumption of the actual maintenance dose.

If the patient presents recurrent allergic symptoms (not anaphylaxis) with the maintenance dose at home, it is recommended to reduce the current maintenance dose by at least half.

If the patient presents an anaphylactic reaction with the maintenance dose at home, first of all, it is recommended to manage the anaphylaxis episode\(^2\) and interrupt the oral FA-IT until regular practice is resumed.

**Recommendations in diagnosed SARS-CoV-2 infected patients**

Interrupting oral FA-IT is advised. Oral FA-IT should be discontinued by symptomatic patients with positive test results (RT-PCR).

**Recommendations in suspected SARS-CoV-2 infected patients**

Interrupting oral FA-IT is not advised for an asymptomatic patient with exposure or contact to SARS-CoV-2 positive individuals. Oral FA-IT should be continued,\(^14\) reducing the current maintenance dose by half in the event of suspected symptoms (fever and at least one sign/symptom of respiratory disease such as cough or shortness of breath).

**Recommendations in recovered patients after a SARS-CoV-2 infection**

Resuming oral FA-IT is advised

- at home for those patients who suspended the maintenance dose for not more than 2 weeks;
- in the hospital for patients who suspended the maintenance dose for more than 2 weeks.

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**Conflict of interest**

The authors declare that they have no conflict of interest.
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