Ask the Expert



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Vaccine Allergy

This section aims to provide up-to-date, evidence-based, yet easy-to-understand allergy information to our Nursing and Allied Health (NAH) members. In this issue, we have invited Dr. Philip Li to talk about vaccine allergy.

What is vaccine allergy and how common is it?

Vaccine allergy is when the immune system acts inappropriately and adversely to a vaccine (or any of its components). In general, allergic reactions or anaphylaxis to vaccines are exceedingly rare. The approximate rate of severe vaccine allergy (such as anaphylaxis) is thought to be around one per one million vaccinations.[1]

What are the differences between side effects versus allergic reactions after vaccination?

Any unintended or unwanted effects of a vaccine can be regarded as "side effects". This includes all adverse effects, such as pain or irritation around the injection site following vaccination. For allergic reactions, we refer to adverse reactions involving the immune system. These are often divided into immediate- and non-immediate reactions.

For immediate-type reactions, these often occur within minutes after vaccination. These reactions are characterized by the same symptoms as immediate reactions to other allergens, including skin manifestations (urticaria, angioedema, itching), respiratory manifestations (cough, hoarseness of voice, difficulty in breathing, wheezing) and drop in blood pressure (weakness, loss of consciousness). Immediate severe, multi-system involvement is also known as anaphylaxis. On the other hand, non-immediate allergic reactions often occur days after a vaccination. These may include delayed local reactions or eczematous rashes after vaccination. In most cases, occurrence of non-immediate, non-life-threatening reactions to a vaccine is not a contraindication for further vaccinations.

The COVID-19 vaccines have raised a lot of concerns in vaccine allergy lately, what are the ingredients that are most likely causing the allergic reactions?

The COVID-19 vaccines have raised a lot of concerns due to a relatively higher rate of severe immediate-type reactions and anaphylaxis than other vaccines. However, the absolute rate of occurrence is still exceedingly rare. The public should be reassured both vaccines available in Hong Kong (Comirnaty by BioNTech / Fosun and Coronavac by Sinovac) are considered to be safe and effective.

Comirnaty contains polyethylene glycol (PEG).[2] PEG is the primary ingredient in some laxatives, an excipient in many medications, and it is used to improve the therapeutic activity of some medications (including certain chemotherapeutics). Reactions to PEG are rare, but anaphylaxis has been reported.[3] From overseas experience, PEG is the main component which allergists are suspecting as the cause of anaphylaxis to Comirnaty vaccines.[4] With more experience and data regarding allergic reactions following CoronaVac, there will be better understanding and guidelines for management of these cases.

Who is at risk?

Due to the relative short experience of COVID-19 vaccine use, there is still limited data on who is at risk of COVID-19 vaccine associated allergy. The most definite risk factor includes a history of immediate-type allergic reaction to the first dose of COVID-19 vaccine (or any component of the vaccine). Anyone with such history is advised to seek an allergist's evaluation prior to receiving the next COVID-19 vaccine.

Other proposed risk factors, which are considered to increase the risk of COVID-19 vaccine-associated allergy by some experts include: a history of anaphylaxis and a history of severe immediate-type allergic reactions to multiple foods or more than one class of drugs.[4] However, more data and prospective trials are required to objectively determine if these risk factors are accurate.

Is there anyway one can find out if he/she is allergic to these ingredients before they consider the vaccines?

If one suspects he/she has COVID-19 vaccine associated allergy, he/she should be referred to an allergist for further evaluation. His or her allergist can employ allergy tests, such as skin testing, to evaluate the possibility of vaccine or excipient-related allergy. Results of these tests may be very helpful toward deciding the possibility of future vaccination.

However, excipient skin testing has been associated with systemic reactions (including anaphylaxis), and its predictive value for COVID-19 vaccine associated allergy is still unknown. **We therefore advise that pre-vaccination vaccine or excipient allergy testing should not be routinely performed**, especially for people who are not at higher risk for COVID-19 vaccine associated allergic reactions.

Reference

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