

Selections from international journals

Nahla M. Heshmat

Professor of Pediatrics, Ain Shams University

World Allergy Organ J. 2021; 14(2): 100517.

COVID-19 vaccine-associated anaphylaxis: A statement of the World Allergy Organization Anaphylaxis Committee.

Turner PJ, Ansotegui IJ, Campbell DE, Cardona V, Ebisawa M, El-Gamal Y, Fineman S, Geller M, Gonzalez-Estrada A, Greenberger PA, Leung ASY, Levin ME, Muraro A, Borges MS, Senna G, Tanno LK, Thong BY, Worm M, and WAO Anaphylaxis Committee.

Vaccines against COVID-19 (and its emerging variants) are an essential global intervention to control the current pandemic situation. Vaccines often cause adverse events; however, the vast majority of adverse events following immunization (AEFI) are a consequence of the vaccine stimulating a protective immune response, and not allergic in etiology. Anaphylaxis as an AEFI is uncommon, occurring at a rate of less than 1 per million doses for most vaccines. However, within the first days of initiating mass vaccination with the Pfizer-BioNTech COVID-19 vaccine BNT162b2, there were reports of anaphylaxis from the United Kingdom and United States. More recent data imply an incidence of anaphylaxis closer to 1:200,000 doses with respect to the Pfizer-BioNTech vaccine.

In this position paper, we discuss the background to reactions to the current COVID-19 vaccines and relevant steps to mitigate against the risk of anaphylaxis as an AEFI. We propose a global surveillance strategy led by allergists in order to understand the potential risk and generate data to inform evidence-based guidance, and thus provide reassurance to public health bodies and members of the public.

Pediatr Allergy Immunol. 2021; 32(1):17-22.

The potential threat of multisystem inflammatory syndrome in children during the COVID-19 pandemic.

Rothan HA, Byrareddy SN.

Multisystem inflammatory syndrome in children (MIS-C) during the COVID-19 pandemic raised a global alert from the Centers for Disease Control and Prevention's Health Alert Network. The main manifestations of MIS-C (also known as pediatric MIS (PMIS)) in the setting of a severe inflammatory state include fever, diarrhea, shock, and variable presence of rash, conjunctivitis, extremity edema, and mucous membrane changes. In some cases, these symptoms progressed to multi-organ failure. The low percentage of children with asymptomatic cases compared with mild illness and moderate illness could be correlated with the rare cases of MIS-C. One potential explanation for the progression to severe MIS-C disease despite the presence of readily detectable anti-SARS-CoV-2 antibodies could be due to the potential role of antibody-dependent enhancement (ADE). We reason that the incidence of the ADE phenomenon whereby the pathogen-specific antibodies can promote pathology should be considered in vaccine development against SARS-CoV-2.

J Allergy Clin Immunol Pract. 2020; 8(8): 2592–2599.

Impact of COVID-19 on Pediatric Asthma: Practice Adjustments and Disease Burden.

Papadopoulos NG, Custovic A, Deschildre A, Mathioudakis AG, Phipatanakul W, Wong G, Xepapadaki P, Agache I, Bacharier L, Bonini M, Castro-Rodriguez JA, Chen Z, Craig T, Ducharme FM, El-Sayed ZA, Feleszko W, Fiocchi A, Garcia-Marcos L, Gern JE, Goh A, Gómez RM, Hamelmann EH, Hedlin G, Hossny EM, Jartti T, Kalayci O, Kaplan A, Konradsen J, Kuna P, Lau S, Souef PL, Lemanske RF, Mäkelä MJ, Morais-Almeida M, Murray C, Nagaraju K, Namazova-Baranova L, Garcia AN, Yusuf OM, Pitrez PMC, Pohunek P, Beltrán CFP, Roberts GC, Valiulis A, Zar HJ, and Pediatric Asthma in Real Life Collaborators.

Background: It is unclear whether asthma may affect susceptibility or severity of coronavirus disease 2019 (COVID-19) in children and how pediatric asthma services worldwide have responded to the pandemic. **Objective:** To describe the impact of the COVID-19 pandemic on pediatric asthma services and on disease burden in their patients. **Methods:** An online survey was sent to members of the Pediatric Asthma in Real Life think tank and the World Allergy Organization Pediatric Asthma Committee. It included questions on service provision, disease burden, and the clinical course of confirmed cases of COVID-19 infection among children with asthma. **Results:** Ninety-one respondents, caring for an estimated population of more than 133,000 children with asthma, completed the survey. COVID-19 significantly impacted pediatric asthma services: 39% ceased physical appointments, 47% stopped accepting new patients, and 75% limited patients' visits. Consultations were almost halved to a median of 20 (interquartile range, 10-25) patients per week. Virtual clinics and helplines were launched in most centers. Better than expected disease control was reported in 20% (10%-40%) of patients, whereas control was negatively affected in only 10% (7.5%-12.5%). Adherence also appeared to increase. Only 15 confirmed cases of COVID-19 were reported among the population; the estimated incidence is not apparently different from the reports of general pediatric cohorts. **Conclusions:** Children with asthma do not appear to be disproportionately affected by COVID-19. Outcomes may even have improved, possibly through increased adherence and/or reduced exposures. Clinical services have rapidly responded to the pandemic by limiting and replacing physical appointments with virtual encounters.

Allergy. 2021; 76(1):210-222.

Laser-facilitated epicutaneous immunotherapy with hypoallergenic beta-glucan neoglycoconjugates suppresses lung inflammation and avoids local side effects in a mouse model of allergic asthma.

Korotchenko E, Schießl V, Scheiblhofer S, Schubert M, Dall E, Joubert IA, Strandt H, Neuper T, Sarajlic M, Bauer R, Geppert M, Joedicke D, Wildner S, Schaller S, Winkler S, Gadermaier G, Horejs-Hoeck J, Weiss R.

Background: Allergen-specific immunotherapy via the skin targets a tissue rich in antigen-presenting cells but can be associated with local and systemic side effects. Allergen-polysaccharide neoglycoconjugates increase immunization efficacy by targeting and activating dendritic cells via C-type lectin receptors and reduce side effects. **Objective:** We investigated the immunogenicity, allergenicity, and therapeutic efficacy of laminarin-ovalbumin neoglycoconjugates (LamOVA). **Methods:** The biological activity of LamOVA was characterized in vitro using bone marrow-derived dendritic cells. Immunogenicity and therapeutic efficacy were analyzed in BALB/c mice. Epicutaneous immunotherapy (EPIT) was performed using fractional infrared laser ablation to generate micropores in the skin, and the effects of LamOVA on blocking IgG, IgE, cellular composition of BAL, lung, and spleen, lung function, and T-cell polarization were assessed. **Results:** Conjugation of laminarin to ovalbumin reduced its IgE binding capacity fivefold and increased its immunogenicity threefold in terms of IgG generation. EPIT with LamOVA induced significantly higher IgG levels than OVA, matching the levels induced by s.c. injection of OVA/alum (SCIT). EPIT was equally effective as SCIT in terms of blocking IgG induction and suppression of lung inflammation and airway hyperresponsiveness, but SCIT was associated with higher levels of therapy-induced IgE and TH2 cytokines. EPIT with LamOVA induced significantly lower local skin reactions during therapy compared to unconjugated OVA. **Conclusion:** Conjugation of ovalbumin to laminarin increased its immunogenicity while at the same time reducing local side effects. LamOVA EPIT via laser-generated micropores is safe and equally effective compared to SCIT with alum, without the need for adjuvant.