



In response to comment on “Autoimmune post-COVID vaccine syndromes: does the spectrum of autoimmune/inflammatory syndrome expand?” by Jara LJ et al

Luis J. Jara^{1,2} · Olga Vera-Lastra^{2,3} · Naim Mahroum⁴ · Carlos Pineda^{2,5} · Yehuda Shoenfeld⁶

Received: 9 June 2022 / Revised: 9 June 2022 / Accepted: 14 June 2022 / Published online: 19 July 2022
© The Author(s), under exclusive licence to International League of Associations for Rheumatology (ILAR) 2022

We thank Dr. Kunal Chandwar for their interest in our article “Autoimmune post-COVID vaccine syndromes: does the spectrum of autoimmune/inflammatory syndrome expand?” Indeed, we have included all of the COVID-19 vaccines, and we agree with you that they have different mechanisms of action but similar capabilities to protect against COVID-19 to millions of people. Therefore, they also can induce adverse effects, including autoimmune syndromes, in a minority of people with genetic and environmental risk factors [1]. In this context, the adjuvants accompanying vaccines are the main candidates to explain the autoimmune syndromes observed by us and others shortly after applying the COVID-19 vaccine. The adjuvant is a stimulant of the immune system (comes from the Latin word *Adjuvare*, to add to stimulate) [2]. And therefore, even though the mRNA does not have a real adjuvant, it contains materials which

hyperstimulate the immune system. The candidate B-lymphocyte stimulators are lipid nanoparticles, age-associated B cells (ABC), or other vaccine components that have been proposed. One should not forget also the mechanism of molecular mimicry, which plays in concert with the hyperstimulation [3]. The emergence of a panoply of autoimmune diseases following the COVID-19 vaccine alludes also to the support of the ASIA concept, namely the need for genetics, which indicates an aggressive immune system with an outer (environmental) stimulant and molecular mimicry which leads to autoimmunity and eventually to lymphoproliferative conditions [4, 5]. Due to the aforementioned, the description of autoimmune syndromes after the COVID-19 vaccine expands the Autoimmune/inflammatory Syndrome concept, Induced by “Adjuvants” (ASIA).

This reply refers to the comment available online at <https://doi.org/10.1007/s10067-022-06191-2>.

✉ Luis J. Jara
luis_jara_quezada@hotmail.com
Yehuda Shoenfeld
Israel.Yehuda.Shoenfeld@sheba.health.gov.il

¹ Rheumatology Division, National Institute of Rehabilitation Luis Guillermo Ibarra Ibarra, Mexico City, Mexico

² Universidad Nacional Autónoma de Mexico, Mexico City, Mexico

³ Internal Medicine Department, Hospital de Especialidades “Dr. Antonio Fraga Mouret”, Instituto Mexicano del Seguro Social, Centro Médico Nacional La Raza, Mexico City, Mexico

⁴ International School of Medicine, Istanbul Medipol University, Istanbul, Turkey

⁵ National Institute of Rehabilitation Luis Guillermo Ibarra Ibarra, Mexico City, Mexico

⁶ Department of Medicine, Ariel University, Ariel, Israel

Declarations

Disclosures None.

References

1. Arango MT, Perricone C, Kivity S, Cipriano E, Ceccarelli F, Valesini G, Shoenfeld Y (2017) HLA-DRB1 the notorious gene in the mosaic of autoimmunity. *Immunol Res* 65:82–98. <https://doi.org/10.1007/s12026-016-8817-7>
2. Watad A, Quaresma M, Bragazzi NL, Cervera R, Tervaert JWC, Amital H, Shoenfeld Y (2018) The autoimmune/inflammatory syndrome induced by adjuvants (ASIA)/Shoenfeld’s syndrome: descriptive analysis of 300 patients from the international ASIA syndrome registry. *Clin Rheumatol* 37:483–493. <https://doi.org/10.1007/s10067-017-3748-9>

3. Kanduc D, Shoenfeld Y (2020) Molecular mimicry between SARS-CoV-2 spike glycoprotein and mammalian proteomes: implications for the vaccine. *Immunol Res* 68:310–313. <https://doi.org/10.1007/s12026-020-09152-6>
4. Watad A, De Marco G, Mahajna H, Druyan A, Eltity M, Hijazi N, Haddad A, Elias M, Zisman D, Naffaa ME, Brodavka M, Cohen Y, Abu-Much A, Abu Elhija M, Bridgewood C, Langevitz P, McLorinan J, Bragazzi NL, Marzo-Ortega H, Lidar M, Calabrese C, Calabrese L, Vital E, Shoenfeld Y, Amital H, McGonagle D (2021) Immune-mediated disease flares or new-onset disease in 27 subjects following mRNA/DNA SARS-CoV-2 vaccination. *Vaccines (Basel)* 9:435. <https://doi.org/10.3390/vaccines9050435>
5. Das L, Bhadada SK, Sood A (2022) Post-COVID-vaccine auto-immune/inflammatory syndrome in response to adjuvants (ASIA syndrome) manifesting as subacute thyroiditis. *J Endocrinol Invest* 45:465–467. <https://doi.org/10.1007/s40618-021-01681-7>

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.