

COVID-19 Vaccination Reactogenicity in Persons With Multiple Sclerosis

Background

- SARS-CoV-2 vaccine clinical trials have largely excluded people with autoimmune conditions, such as multiple sclerosis (MS), and those receiving immunomodulatory drugs.
- Only a few real-world observational studies have examined SARS-CoV-2 vaccine reactogenicity in patients with MS.¹⁻³
- Further study is warranted to account for clinical disease factors, such as physical impairment and disease-modifying therapy (DMT) status.
- **Objective:** This study examined (1) SARS-CoV-2 vaccine reactogenicity in people with MS, and (2) the relationships of reactogenicity with patient and disease factors.

Methods

- The study included adult members of the iConquerMS™ people-powered research network who were invited to complete a survey on their SARS-CoV-2 vaccination experience.
 - Study participants were asked to report the SARS-CoV-2 vaccines they had received, vaccination dates, and reactogenicity experienced ≤24 hours after vaccination doses.
 - Participants were also asked about MS subtype, MS duration, physical impairment, and DMT usage, including DMT drug class and date of last treatment.
- The associations between SARS-CoV-2 vaccine reactogenicity and patient characteristics and clinical disease factors were examined with multivariable models.

Results

- Among 719 people with MS who received a first SARS-CoV-2 vaccine dose, 64% reported any reaction and 17% reported a severe reaction to their first dose.
 - The most commonly reported reactions were pain at injection site (54%), fatigue (34%), headache (28%), and malaise (21%).
- Among 442 people who also received a second dose, 74% reported any reaction and 22% reported a severe reaction.
 - The most commonly reported reactions were pain at injection site (61%), fatigue (53%), headache (40%), malaise (35%), muscle ache (32%), and chills (26%).
- Reactogenicity to the first vaccine dose was associated with younger age, female sex, having received the Oxford-AstraZeneca (ChAdOx1 nCoV-19) vs the Pfizer-BioNTech (BNT162b2) vaccine, and prior SARS-CoV-2 infection.
 - Severe reaction to a first vaccine dose was associated with the same patient characteristics, in addition to greater physical impairment.
 - Use of an alpha4-integrin blocker or sphingosine-1-phosphate receptor modulator (vs no DMT) was associated with a lower likelihood of severe reaction.
- Reactogenicity to the second vaccine dose was associated with younger age and having received the Moderna (mRNA-1273) vs Pfizer-BioNTech (BNT162b2) vaccine. A lower likelihood of any reaction was associated with use of a sphingosine-1-phosphate receptor modulator or fumarate.

Conclusions

- The study findings show that reactogenicity to SARS-CoV-2 vaccines for people with MS was similar to that in the general populations studied in clinical trials; for example, over 75% of recipients of the Pfizer or Moderna vaccines reported pain at the injection site, >35% reported fatigue, and >30% reported headache after their first doses.^{4,5}
- Certain DMTs were associated with a lower likelihood of reactogenicity.

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See page 2.

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Webpage

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References

1. Boekel L, Kummer LY, van Dam KPJ, et al. *Lancet Rheumatol.* 2021;3:e542-e545. doi:10.1016/S2665-9913(21)00181-8
2. Achiron A, Dolev M, Menascu S, et al. *Mult Scler.* 2021;27:864-870. doi:10.1177/13524585211003476
3. Lotan I, Wilf-Yarkoni A, Friedman Y, et al. *Eur J Neurol.* 2021;28:3742-3748. doi:10.1111/ene.15028
4. Polack FP, Thomas SJ, Kitchin N, et al. *N Engl J Med.* 2020;383(27):2603-2615.
5. Baden LR, El Sahly HM, Essink B, et al. *N Engl J Med.* 2021;384(5):403-416.

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