Vaccination against SARS-CoV-2 in people with psoriasis disease

EuroGuiDerm Consensus statement - *Updated version January 2022.*

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Consensus based statement. Agreement 20/26 of the expert group, 6/26 no responses received.

In a very short time, several different vaccines licensed for active immunization against SARS-CoV 2 infection became available and there are more to come. Frequent questions encountered in clinical practice from patients or physicians comprise if a) vaccinations could aggravate psoriasis b) if the efficacy of vaccinations is affected by anti-psoriatic treatment with a need to modify the vaccination-strategy (e.g. variation of dose and/or intervals) and c) whether psoriasis treatment schedules must be changed to secure optimal vaccination responses.

As of today, vaccination of children has been recommended in many countries and there is approval of vaccines for this indication. As no data about children with psoriasis and their level of protection from vaccination as well as no data on the course of psoriasis with or without treatment is available yet, no guidance can be given at this time point. The following text therefore pertains to adult patients.

Should patients undergoing systemic therapy for psoriatic disease be vaccinated?

For patients with psoriasis receiving a systemic therapy, vaccination against COVID-19 is recommended. This holds true in particular for patients with psoriasis or psoriatic arthritis with comorbidities such as obesity, hypertension, diabetes, and cardiac disease, which may increase risk of severe COVID19 [1]. To date there is no robust evidence to indicate that there is a negative impact on psoriasis and psoriatic arthritis due to the mode of action of the mRNA- and the vector-based vaccines.

Patients on therapies with an effect on the immune system were excluded from the clinical trials of vaccines, but early studies investigating the efficacy and safety of SARS-CoV-2 vaccines in patients with immune mediated inflammatory disease (IMID) including psoriasis treated with conventional or biologic disease modifying antirheumatic drugs have been recently published [2, 3].

In particular, humoral and cellular immunogenicity to a second dose of COVID-19 vaccine BNT162b2 in people receiving methotrexate or targeted immunosuppression have been investigated in a longitudinal cohort study [4]. The study population included patients with psoriasis (n=82), receiving methotrexate (n=14), TNF inhibitors (n=19), IL-17 inhibitors (n=14), IL-23 inhibitors (n=20), and 15 healthy controls, who had received two vaccine doses. All participants had detectable spike-specific

antibodies at 14 days following the second dose, and all groups (methotrexate, biologics, and healthy controls) demonstrated similar neutralizing antibody titers against wild-type, alpha, and delta variants. There was no difference in the magnitude of T-cell responses between patients receiving methotrexate (median cytokine-secreting cells per 106 cells 160 [IQR 10-625]), targeted biologics (169 [25-503], p=0·56), and controls (185 [133-328], p=0·41). However, a lower proportion of participants on methotrexate (eight [62%] of 13, 95% CI 32-86) and targeted biologics (37 [74%] of 50, 60-85; p=0·38) had detectable T-cell responses following the second vaccine dose, compared with controls (14 [100%] of 14, 77-100; p=0·022). The authors conclude that the functional humoral immunity (i.e., the neutralizing antibody responses) at 14 days following a second dose of BNT162b2 was not impaired by methotrexate or targeted biologics, but a proportion of patients on immunosuppression did not have detectable T-cell responses following the second dose.

In another similar study, the humoral and cellular immune response to two doses of BNT162b2 mRNA COVID-19 vaccine in participants with IMIDs on immunosuppressants compared with healthy controls (n=208) have been investigated. Patients with IMIDs on methotrexate (n=45) demonstrate up to a 62% reduced rate of adequate immunogenicity to the BNT162b2 mRNA vaccination [5]. Those on biologic (n=37) or non-methotrexate oral immunosuppressants demonstrate similar levels of immunogenicity as healthy controls (greater than 90%). Similarly, vaccination did not induce an activated CD8+ T cell response in participants on methotrexate, unlike healthy controls and patients with IMID not receiving methotrexate.

These results suggest that patients on methotrexate may need modified vaccination strategies such as additional doses of vaccine, dose modification of methotrexate, or even a temporary discontinuation of this drug (e.g. for 5 pharmacological half-lives).

For ciclosporine, tofacitinib and upadacitinib (janus-kinase inhibitor approved for treatment of psoriatic arthritis) - no conclusive data is available to evaluate a potential effect on COVID-19 vaccination response.

The vaccines were safe in psoriasis patients on systemic therapy given that they are not live-attenuated vaccines. Vaccine interactions with systemic therapies approved for psoriasis and psoriatic arthritis are unlikely.

Weighing the potential benefits and risks, we recommend offering COVID-19 vaccination to all patients with psoriasis on systemic therapy. Patients and clinicians should be aware that vaccine effectiveness may be reduced in selected individuals.

As there seems to be a decline in the level of vaccine induced antibodies over time, EMA suggested that a third dose of vaccine should be considered, in agreement with local policies, in people aged 18 years or older people with normal immune systems at least 3-6 months (check with frequently changing local recommendations) after the second dose [6].

Heterologous vaccination (i.e. using different vaccines) might have advantages and is supported by EMA and ECDC [7]. Evidence seems stronger for a second dose of mRNA vaccine to previous recipients of a single dose of vector vaccines as primary vaccination. Booster heterologous vaccination with mRNA vaccines is also suggested. At the current time, there are no data in immunosuppressed individuals to support a recommendation for heterologous boosting.

Since these early studies showed that some patients with IMIDs on immunosuppressive therapies could have a reduced response to mRNA SARS-CoV-2 vaccines, we support the strategy of providing a third dose of the vaccine in patients with psoriasis receiving immunosuppressants.[3] This third dose should be administered at least 28 days after the second dose in patients receiving immunosuppressants, and at least 3-6 months after the second dose in other adults [6].

These recommendations will be updated periodically and be informed by emerging new data. Due to the rapidly changing evidence base new developments should be considered.

In summary:

1. It is recommended to vaccinate people with psoriasis with the approved COVID-19 vaccines. The vaccines are expected to be safe in psoriasis patients on immunosuppressants.
2. During the phase of vaccination, psoriasis treatment with any approved medication should not be interrupted. If feasible, it is recommended to plan vaccination in the middle of the interval between two applications of the drug where feasible. In people taking ciclosporin, methotrexate or tofacitinib consider a short interruption after the vaccination.
3. Given that vaccine effectiveness may not be guaranteed, individuals on systemic therapy should continue to follow risk mitigation strategies (such as wearing masks and social distancing).
4. People with psoriasis should be receiving other vaccines such as against influenza and pneumococci as recommended.
5. Early studies have shown that some patients with immune mediated inflammatory diseases on immunosuppressive therapies could have a reduced response to mRNA COVID-19 vaccines.

Thus, a third vaccine dose after at least 28 days of the second vaccine dose should be considered.

6. Booster vaccine doses should be administered in agreement with local policies [6].

References

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