

COVID 19 vaccinations: What a dermatologist should know

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The Covid 19 pandemic has taken the world by storm and changed many aspects of our lives. As we enter into the third phase of the pandemic the only thing that reassures us is the advent of wide- scale vaccinations that has started all over the world including Pakistan. As physicians, it is our primary responsibility to promote vaccinations and develop public health guidelines. However we must be aware of potential side effects and be prepared to prevent and manage them.

As seen with other vaccines, various cutaneous reactions after COVID-19 vaccination have been reported widely during vaccine trials. We present an overview of the current cutaneous reactions reported till now to guide dermatologists for vaccine-related counseling, prevention, and management.

To date there are 13 authorized vaccines available, based on how they function.¹ Two most well-known ones i.e. Moderna and Pfizer-BioNTech are mRNA vaccines. Sinopharm which is currently being administered in Pakistan, and 3 other vaccines are inactivated virus vaccines. Five others including AstraZeneca and Sputnik V which are expected to be available in Pakistan soon are viral vector

vaccines. Two more vaccines which are protein subunit vaccines are also available. Most of these vaccines have an efficacy ranging from 70-95% after the completion of dosage.²

Most common cutaneous reactions after COVID-19 vaccination are localized redness and swelling seen in a large number of the patients with almost all the currently available vaccines.³ However other skin reactions reported less commonly are contact dermatitis, exfoliative rash, injection site reactions, injection site urticaria, maculo-papular rash and vesicular rash.³ These have been reported mostly with mRNA vaccines. The commonly described entity of 'COVID arm' in the literature is characterized by swelling, pain, redness and itching around the injection site usually the upper arm.⁴ Anaphylactic reactions are also potentially serious side effects seen with these vaccines. The mRNA vaccines (Moderna and Pfizer BioNtech) contain polyethylene glycol as an excipient that can trigger the anaphylaxis.⁵ This suggests that care must be taken in those who are patch-test positive or have a history of allergy to polyethylene glycol-containing products.

Reactions to dermal fillers after Moderna vaccination were reported in three patients during its trial. These patients developed facial swelling after the vaccination. One patient had Hyaluronic Acid (HA) filler injection 6 months prior and the other 2 weeks prior to vaccination. A third patient who had a lip filler developed

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localized lip swelling few days after getting vaccinated. In all three patients, swelling resolved with anti histamine and short course steroids.⁶ Immunogenic dermal filler reactions are rare, with both immediate and delayed type hypersensitivity reactions (DTR) reported. Immediate hypersensitivity reactions occur within minutes of injection by immunoglobulin E-mediated histamine release from mast cells, while DTRs are mediated by macrophage and T-cell interactions developing in 48 to 72 hours after injection. However they can also occur weeks to months or even years later.⁷

The reason why DTRs are seen with dermal filler after certain immunogenic triggers (e.g. COVID-19 or other vaccines) is that fillers may act as adjuvants rather than direct T-cell activators, enhancing the antigen-specific immune response without triggering one on their own. Thus, in genetically predisposed individuals, there is a lower threshold for vaccines, infections, or other inciting factors to trigger inflammatory reactions.⁸ Also HA begins to degrade 3 to 5 months later, leading to breakdown products that can stimulate the immune system when paired with additional triggers.⁹

Recommendations for prevention and management of all these cutaneous side effects include pre-vaccine counseling especially in patients with allergies, a history of injection site reactions, or urticaria and timely management with antihistamines and topical medications. Patients going for filler injections may be counseled regarding vaccine options not associated with adverse reactions; especially for patients with risk factors. Procedures should be planned so as to ensure a 4-8 weeks gap between filler injections and vaccination for the general population, and potentially longer for those with risk factors like immunologic disorders and a history of sensitivity to dermal fillers to

minimize the risk of reactions. Dilution of filler is another option, with available data showing that the dilution of HA with saline, sterile water, or lidocaine can reduce the risk of adverse events and DTRs.¹⁰

With the development of new drugs and vaccines, complete knowledge of their cutaneous side effects can only be gained after their mass usage. Dermatologists must be aware of and be prepared to address these situations as they arise, helping patients through the vaccination process by educating them and dismissing misconceptions. Of particular importance here is the fact that the risks of the vaccine are far outweighed by its benefits in preventing a potentially fatal illness.

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