

An Overview of COVID's Impact on Dermatology

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It's hard to believe that it has been nearly two years since the COVID-19 pandemic began. It is also hard to overstate the impact of the pandemic on each of us. Prolonged office closures with concomitant reduced productivity, the introduction (and for most, the persistence) of personal protective equipment (PPE), elimination of introductory handshakes with our patients, and for many of us, the tragic loss of colleagues, friends and family due to illness are chief among the ways our practices and lives have been indelibly altered. In this country, there have been more than 47.6 million confirmed infections and more than 770,000 COVID-19-related deaths to date.

There have been some interesting intersections between COVID-19 and our field of dermatology, some of which I will highlight below.

Diagnosis Delay and Telemedicine

Mandatory lockdowns during the first few months of the pandemic limited patients' access to urgent dermatologic care. At one academic institution, significant increases in tumor thickness and ulceration among new melanoma diagnoses were observed in the three-month period immediately following lockdown in the New York City metropolitan area.

Mandated social distancing required many of us to turn to telemedicine early in the pandemic. One of the greatest barriers to telehealth in dermatology is the possibility of a delayed melanoma diagnosis. Low-resolution video calls can be unreliable and depending on lesion location, patients may have difficulty capturing quality images.

The DermTech Pigmented Lesion Assay (PLA) is a non-invasive genomic test that allows dermatologists to sample entire lesions using smart sticker technology, improving early melanoma detection. This technology painlessly collects RNA and DNA for genomic analysis. A positive test result indicates that the lesion is expressing one of two genes (LINC00518 or PRAME) or is positive for a TERT promoter mutation. Any single or combination of these genetic changes correlates with melanoma. This test thereby provides concrete, actionable, genomic data, allowing us to hone in on potentially malignant lesions (and in turn avoid unnecessary biopsies). During the pandemic, the ability to collaborate with patients to perform this test in the comfort of their home was invaluable.

In our practice, we employed DermTech PLA to aid in the remote and prompt diagnosis of pigmented lesions through telemedicine. When a concerning lesion was identified, we arranged for a DermTech PLA kit to be sent directly to the patient's home. A member of our staff then counseled the patient through the collection process via video call. Results from DermTech's Gene Lab are typically received within one week. If a test result was positive, an in-person visit was immediately arranged for further inspection and a biopsy. This proved particularly useful for those who were immunosuppressed or living in underserved areas.

COVID and Cutaneous Manifestations

A wide range of cutaneous manifestations have been reported in association with COVID infection. Various morphologies of eruptions have been described, including morbilliform, urticarial, chilblain-like, vesicular and livedoid eruptions. Perhaps greatest controversy surrounds an entity commonly referred to as "COVID toes."

Early reports of chilblains-like lesions among documented COVID-infected patients, and reports of ultrastructural detection of COVID infection within these lesions, suggested a pathophysiological relationship. Early in the pandemic, otherwise healthy and asymptomatic patients presenting with these lesions (typically via telemedicine) raised questions about the need to test these patients for COVID-infection and potentially hypercoagulable states. In our NYC practice, we would routinely obtain PCR tests, as well as check D-dimer levels and empirically initiate daily aspirin unless contraindicated. However, subsequent large series of patients with chilblains-like lesions revealed low infection rates among these individuals, calling into question whether COVID toes is truly a correlated entity. Anecdotally, our practice witnessed an uptick in the occurrence of chilblains-like lesions. Indeed, many of these patients tested negative for the virus and for antibodies. Some posit that the appearance of these lesions may correlate with later stage of infection (hence the negative PCR test) and also possibly with the inability to mount a humoral response.

Vaccination and Cutaneous Manifestations

The (remarkably) rapid development and roll-out of COVID vaccinations has provided a means for us to resume some pre-pandemic normalcy. An estimated 49.7% of the world population and 74% of the eligible (5+) population in the United States has received at least a single dose of a COVID-19 vaccine. Awareness of the potential for various vaccine-related adverse cutaneous events is essential for Dermatologists.

Cutaneous reactions following COVID-19 vaccination have been reported in alignment with those following other vaccinations - most commonly injection site redness and swelling. An allergic reaction to the excipient polyethylene glycol (PEG) may account for some of these reactions, and caution should be taken in those with a known history of allergy to PEG. Other mucocutaneous reactions including pruritus, urticaria, and angioedema have also been reported. Concern over recurrent reactions may contribute to unnecessary avoidance of future vaccination.

In one prospective study of 50,000 health care employees, more than 4% of individuals who completed a 2-dose course of mRNA COVID-19 vaccines reported a cutaneous reaction. These reactions predominated in women, and the vast majority were local and self-limited reactions. Notably, more than 80% of those who reacted adversely to the first vaccine did not have a recurrent cutaneous reaction with repeat vaccination. Cutaneous reactions alone are not a contraindication to revaccination, unlike anaphylaxis.

Dermal Filler Reactions and COVID Infection/COVID Vaccination

Immunogenic dermal filler reactions are rare. Immediate hypersensitivity reactions are IgE-mediated, occur within minutes of injection, and are characterized by urticaria, angioedema, and anaphylaxis. Delayed type hypersensitivity reactions (DTRs) are mediated by macrophage and T-cell interactions and classically occur 48 to 72 hours after injection, but may be delayed by weeks to months and can manifest as induration and nodule formation, in addition to swelling and erythema at the filler site.

There is increasing awareness of the potential for DTRs in patients with COVID-19 infection, as well as those receiving vaccination in those who have previously had dermal filler injections.

In the experimental arm of the initial Moderna vaccine trial, three filler reactions were reported. Filler injections had been performed in one case two weeks prior, and in another, six months prior to vaccination. Notably, one patient who developed lip swelling after vaccination had previously had a similar such reaction following receipt of the flu vaccine. Since vaccine roll-out, similar such reactions have been reported with all available vaccines.

DTRs are believed to result following certain immunogenic triggers, such as vaccination. Filler substances are thought to function as adjuvants, not direct T-cell activators. Certain HLA subtypes, as well as individuals with autoimmune disorders are predisposed to such inflammatory reactions. Other predisposing events include injury, dental procedures and respiratory infection. Accordingly, we recommend delaying vaccination (and dental work) for at least two weeks following dermal filler placement. Although less compelling, we also try to avoid injecting patients in the two-week period following vaccination or dental work.

In all instances, resolution of symptoms has occurred either spontaneously, or in cases of prolonged edema, after a course of oral steroids and sometimes intralesional hyaluronidase, colchicine or an oral ACE inhibitor. Moreover, this potential risk is greatly outweighed by the benefits of vaccination and ought not deter or delay receipt of the vaccine. It is important that our patients know about this uncommon reaction and, importantly, that it is treatable so they know to reach out to their physician should such a reaction occur.

While a comprehensive discussion of each of the above topics was beyond the scope of this article, I anticipate we will continue to engage in dialogue and research to better understand the continued impact that the COVID pandemic has had on our field.

References

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