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COVID-19 Vaccine and Biologics: An Impending Dilemma

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INTRODUCTION

The COVID-19 pandemic has forced healthcare providers across all specialties to adjust their methods of clinical practice. In dermatology, focus on the continued safe usage of immunomodulating biologic therapies has attracted particular interest as the COVID-19 virus represents a novel infection risk. While guidance on biologic initiation and continuation has been established,[1] the return to normalcy will likely involve a safe and effective vaccine. This vaccine(s) will represent a new clinical hurdle for prescribers who have continued patients on biologic therapy throughout the pandemic.

Biologic therapies have become central in the treatment of many dermatologic diseases. In psoriasis, effectiveness hinges on directly targeting pathogenic TNF-α – IL-23 – Th17 inflammatory pathways. These same cytokine signals play a role in natural infection clearance and may alter immunological memory with vaccination;[2] the immune system's capacity to respond quickly and unambiguously upon re-encounter with a pathogen. Post marketing studies establishing the safety and efficacy of vaccination in patients receiving biologics are conflicting and occasionally lacking.[3,4] FDA prescribing information of biologic therapies used in the treatment of psoriasis often provides limited information pertaining to concurrent administration of commonly administered adult vaccines (influenza, pneumococcal). A novel COVID vaccine will certainly also be underrepresented in prescriber information.

While the final features of a COVID-19 vaccine are undetermined, a systematic approach to vaccination in patients on biologic therapies will be necessary.[4] We foresee the following considerations to be relevant to our biologic-maintained patients:

1. If more than one effective COVID-19 vaccine is approved, patients on a biologic therapy should be administered an inactive type if the option exists.

2. If only a live attenuated vaccine is available, biologic discontinuation will be required. Drug properties such as dosage and pharmacokinetics as well as vaccine characteristics such as length of vaccine induced viremia and immune response kinetics should be factored when determining timing of drug discontinuation to vaccine administration.[4]

3. A small subset of patients who prioritize high titer immunity over potential skin flare may consider biologic discontinuation prior to receiving an inactive vaccine. We believe that regions with high rates of COVID-19 infection, hospitalization, or mortality may justify this unique approach.

Detailed guidance will be required in order to safely vaccinate biologic-maintained patients. When faced with the possibility of interrupting immunosuppressive treatments dermatologists may fear the development of antidrug antibodies (ADAs) that diminish the efficacy of biologic therapy. Recent studies of newer biologics, those targeting the IL-23/IL-17 immunological pathways such as guselkumab, tildrakizumab, and ustekinumab, reveal less than 6.7% of patients developing ADAs.[5] The lower occurrence of immunogenicity seen with IL-23/IL-17 biologics and the growing arsenal of available treatments make restarting or switching biologic therapy after a pause for vaccination a more plausible therapeutic option. We believe early anticipation of vaccine scenarios is essential to ensure safe management of patients on biologic therapies throughout all phases of the COVID-19 pandemic.

DISCLOSURES

Dr. Krase has done consulting for AbbVie and has received an honorarium. Ms. Hauptman and Dr. Vasic have no potential perceived conflicts of interest to disclose.

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