

Latex Hypersensitivity to Injection Devices for Biologic Therapies in Psoriasis Patients

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PRACTICE POINTS

- Latex allergies are common in medical practice, as latex is found in a wide variety of medical supplies, including syringes used for injections and their caps.
- Physicians need to be aware of latex allergies in their patients and exercise extreme caution in the use of latex-containing products. Consult the manufacturer's website or contact them directly to inquire whether any of the components, including the cap and syringe, contain latex.
- If a reproducible rash near the injection site is elicited, therapy with injection devices that do not contain latex in either the cap or syringe should be considered.

An allergic reaction provoked by reexposure to an allergen or antigen is known as a type I or immediate hypersensitivity reaction. Latex allergy is a common cause of type I hypersensitivity reactions. Allergic responses to latex in psoriasis patients receiving frequent injections with biologic agents are not commonly reported in the literature. We report the case of a patient with a long history of psoriasis who developed an allergic response after exposure to injection devices that contained latex components while undergoing treatment with biologic agents.

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An allergic reaction is an exaggerated immune response that is known as a type I or immediate hypersensitivity reaction when provoked by reexposure to an allergen or antigen. Upon initial exposure to the antigen, dendritic cells bind it for presentation to helper T (T_H2) lymphocytes. The T_H2 cells then interact

with B cells, stimulating them to become plasma cells and produce IgE antibodies to the antigen. When exposed to the same allergen a second time, IgE antibodies bind the allergen and cross-link on mast cells and basophils in the blood. Cross-linking stimulates degranulation of the cells, releasing histamine, leukotrienes, prostaglandins, and other cytokines. The major effects of the release of these mediators include vasodilation, increased vascular permeability, and bronchoconstriction. Leukotrienes also are responsible for chemotaxis of white blood cells, further propagating the immune response.¹

Effects of a type I hypersensitivity reaction can be either local or systemic, resulting in symptoms ranging from mild irritation to anaphylactic shock and death. Latex allergy is a common example of a type I hypersensitivity reaction. Latex is found in many medical products, including gloves, rubber, elastics, blood pressure cuffs, bandages, dressings, and syringes. Reactions can include runny nose, tearing eyes, itching, hives, wheals, wheezing, and in rare cases anaphylaxis.² Diagnosis can be suspected based on history and physical examination. Screening is performed with radioallergosorbent testing, which identifies specific IgE antibodies to latex; however, the reported sensitivity and specificity for the latex-specific IgE antibody varies widely in the literature, and the test cannot reliably rule in or rule out a true latex allergy.³

Allergic responses to latex in psoriasis patients receiving frequent injections with biologic agents are not commonly reported in the literature. We report the case of a patient with a long history of psoriasis who developed an allergic response after exposure to injection devices that contained latex components while undergoing treatment with biologic agents.

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Case Report

A 72-year-old man presented with an extensive history of severe psoriasis with frequent flares. Treatment with topical agents and etanercept 6 months prior at an outside facility failed. At the time of presentation, the patient had more than 10% body surface area (BSA) involvement, which included the scalp, legs, chest, and back. He subsequently was started on ustekinumab injections. He initially responded well to therapy, but after 8 months of treatment, he began to have recurrent episodes of acute eruptive rashes over the trunk with associated severe pruritus that reproducibly recurred within 24 hours after each ustekinumab injection. It was decided to discontinue ustekinumab due to concern for intolerance, and the patient was switched to secukinumab.

After starting secukinumab, the patient's BSA involvement was reduced to 2% after 1 month; however, he began to develop an eruptive rash with severe pruritus again that reproducibly recurred after each secukinumab injection. On physical examination the patient had ill-defined, confluent, erythematous patches over much of the trunk and extremities. Punch biopsies of the eruptive dermatitis showed spongiform psoriasis and eosinophils with dermal hypersensitivity, consistent with a drug eruption. Upon further questioning, the patient noted that he had a long history of a strong latex allergy and he would develop a blistering dermatitis when coming into contact with latex, which caused a high suspicion for a latex allergy as the cause of the patient's acute dermatitis flares from his prior ustekinumab and secukinumab injections. Although it was confirmed with the manufacturers that both the ustekinumab syringe and secukinumab pen did not contain latex, the caps of these medications (and many other biologic injections) do have latex (Table). Other differential diagnoses included an atypical paradoxical

psoriasis flare and a drug eruption to secukinumab, which previously has been reported.⁴

Based on the suspected cause of the eruption, the patient was instructed not to touch the cap of the secukinumab pen. Despite this recommendation, the rash was still present at the next appointment 1 month later. Repeat punch biopsy showed similar findings to the one prior with likely dermal hypersensitivity. The rash improved with steroid injections and continued to improve after holding the secukinumab for 1 month.

After resolution of the hypersensitivity reaction, the patient was started on ixekizumab, which does not contain latex in any component according to the manufacturer. After 2 months of treatment, the patient had 2% BSA involvement of psoriasis and has had no further reports of itching, rash, or other symptoms of a hypersensitivity reaction. On follow-up, the patient's psoriasis symptoms continue to be controlled without further reactions after injections of ixekizumab. Radioallergosorbent testing was not performed due to the lack of specificity and sensitivity of the test³ as well as the patient's known history of latex allergy and characteristic dermatitis that developed after exposure to latex and resolution with removal of the agent. These clinical manifestations are highly indicative of a type I hypersensitivity to injection devices that contain latex components during biologic therapy.

Comment

Allergic responses to latex are most commonly seen in those exposed to gloves or rubber, but little has been reported on reactions to injections with pens or syringes that contain latex components. Some case reports have demonstrated allergic responses in diabetic patients receiving insulin injections.^{5,6} MacCracken et al⁵ reported the case of a young boy who had an allergic response to an insulin injection with a syringe containing latex. The patient had a history of bladder exstrophy with a

Biologics Containing Latex Components

Contains Latex

Adalimumab (pen, PFS)
Anakinra (PFS)^a
Etanercept (pen, PFS)
Golimumab (pen, PFS)
Secukinumab (pen, PFS)
Ustekinumab (PFS)

Does Not Contain Latex

Abatacept (PFS, vial)
Brodalumab (PFS)
Certolizumab (PFS)
Etanercept (vial for reconstitution)
Guselkumab (PFS)
Infliximab (PFS)
Ixekizumab (PFS)

Abbreviation: PFS, prefilled syringe.

^aBased on manufacturer's prescribing information.

recent diagnosis of diabetes mellitus. It is well known that patients with spina bifida and other conditions who undergo frequent urological procedures more commonly develop latex allergies. This patient reported a history of swollen lips after a dentist visit, presumably due to contact with latex gloves. Because of the suspected allergy, his first insulin injection was given using a glass syringe and insulin was withdrawn with the top removed due to the top containing latex. He did not experience any complications. After being injected later with insulin drawn through the top using a syringe that contained latex, he developed a flare-up of a 0.5-cm erythematous wheal within minutes with associated pruritus.⁵

Towse et al⁶ described another patient with diabetes who developed a local allergic reaction at the site of insulin injections. Workup by the physician ruled out insulin allergy but showed elevated latex-specific IgE antibodies. Future insulin draws through a latex-containing top produced a wheal at the injection site. After switching to latex-free syringes, the allergic reaction resolved.⁶

Latex allergies are common in medical practice, as latex is found in a wide variety of medical supplies, including syringes used for injections and their caps. Physicians need to be aware of latex allergies in their

patients and exercise extreme caution in the use of latex-containing products. In the treatment of psoriasis, care must be given when injecting biologic agents. Although many injection devices contain latex limited to the cap, it may be enough to invoke an allergic response. If such a response is elicited, therapy with injection devices that do not contain latex in either the cap or syringe should be considered.

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