

Lidocaine Sensitivity in a Patient with Multiple Skin Cancers

To the Editor:

Lidocaine reactions are uncommon in cutaneous surgeries. We present a case of a type IV hypersensitivity reaction in a Mohs' surgery patient confirmed with patch testing.

A 70-year-old white man with a history of multiple skin cancers reported swelling and redness following skin biopsy and several Mohs' surgeries. Over the past 20 years, he had undergone at least 25 shave biopsies and 5 Mohs' procedures. Twenty-four hours after a biopsy of a benign nevus on the chest on December 12, he developed a 5 cm area of erythema, swelling, and pruritus around the site. On January 3 and 5, he underwent Mohs' micrographic surgery for basal cell carcinomas, both on the right cheek. Forty-eight hours following both procedures, he developed a 5 cm erythematous pruritic plaque around the wound. Techni-Care (Care-Tech Laboratories, St. Louis, MO) was used as a prep for both Mohs' procedures, and the anesthetic used was 1% lidocaine, 0.25% bupivacaine, and 1:200,000 epinephrine. He denied having ever used topical products containing lidocaine.

Subsequent patch testing was performed with the Mayo Clinic Contact Dermatitis Core Group standard/preservative, cosmetic, plastics and glues, and rubber series. In addition, he was also tested to a 1:10 dilution of Techni-Care, a surgical scrub that has chloroxylenol USP 3% as the active ingredient. The patch-test sites were examined at 48, 72, and 96 hours. With our scoring system, 1 is a macular reaction, 2 is a papular reaction, 3 is a reaction spreading beyond the margins of the Finn Chamber (Epitest Ltd Oy, Tuusula, Finland), and 4 is a bullous or ulcerative reaction.

The patient demonstrated a 1+ reaction to lidocaine at 48 hours, a 2+ reaction at 72 hours, and a 3+ reaction at 96 hours. He had a 2+ reaction to Techni-Care at all three readings. He did not react to rubber, acrylates, bacitracin, or neomycin. He was not on any antihistamines while undergoing patch testing.

The use of "caine" local anesthetics dates back to 1884, when cocaine was first used in ophthalmology.¹ Synthesis of less caustic local anesthetics followed, first with esters

of p-aminobenzoic acid (PABA) and then with amide anesthetics. Lidocaine was first synthesized and employed in 1946.¹ It is referred to as lignocaine in the European literature. It has become the most commonly used local anesthetic for skin procedures. It is also a component of multiple over-the-counter formulations for topical relief of burns and hemorrhoids.

Lidocaine is an amide anesthetic. Anesthetics are composed of an aromatic group and an amine portion linked by either an ester or an amide. The major amides are lidocaine, prilocaine, bupivacaine, and mepivacaine. The most common esters are procaine, benzocaine, and tetracaine. Articaine is an amide anesthetic that has a thiophene ring rather than the methylated phenyl ring of the other anesthetics in this class.

Reactions to the ester anesthetics have been shown to be much more common than reactions to the amides, possibly due to the hydrolysis of the anesthetic molecule to form the highly antigenic PABA.² Cross-reactivity among the esters is common, but cross-reactivity among the amides is not well documented.³

Adverse reactions to local anesthetics are not uncommonly reported, and many cannot be explained immunologically. Such reactions may occur owing to anxiety regarding injections.^{4,5} In addition, reaction to hidden antigens such as preservatives or skin preparations may confound the diagnosis.

Both type I and type IV reactions to lidocaine are uncommon, but there is a growing body of literature on these reactions. By far, the most common reported reaction to lidocaine occurs after the use of over-the-counter hemorrhoid creams.⁶⁻¹² Other forms of lidocaine that cause type IV reactions are sunburn relief creams,¹²⁻¹⁴ skin injections for dermatologic³ and rheumatologic procedures,¹⁵ dental injections,¹⁶ and topical creams for wound care and rashes.^{12,17,18}

Our patient demonstrated a type IV reaction to lidocaine. His diagnosis was confounded somewhat by the positive reaction to diluted Techni-Care solution. Regardless, he was patch-test positive to lidocaine, and the implications had to be addressed.

Despite the low probability of anaphylaxis in patients with positive patch tests to lidocaine and other local anesthetics, such patients should be tested to elucidate a strategy for further treatment options. Testing should not be performed simply for clarification of diagnosis but should be reserved for patients who are likely to require local anesthetic

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in the future. Mackley and colleagues recommend that all patients with positive patch tests to local anesthetics have confirmatory intradermal challenge with the suspected antigen.¹⁹ It should be noted that any testing must use anesthetic without preservatives or vasoconstrictors, drawn from a bottle with the rubber stopper removed. Standard directions regarding avoidance of antihistamines prior to testing apply.

In almost all cases of local anesthetic reactions, additional testing can enable physicians to identify an alternative agent that can be used safely. Our patient, however, refused to undergo prick and intradermal testing with incremental challenge with alternative agents from the ester and amide classes, even though he is likely to require local anesthetic for future dermatologic procedures.

As the use of lidocaine in topical creams increases and as the incidence of skin cancer rises, the previously rare phenomenon of lidocaine sensitivity may become more common. Physicians should be aware of the proper steps to follow to investigate suspected lidocaine type IV hypersensitivity reactions.

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