

Allergy to multiple local anesthetics

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ABSTRACT

Real allergy to local anesthetic (LA) is very rare. This study was performed to report a case of anaphylaxis to multiple "caine." A 25-years-old atopic nurse developed a very severe anaphylactic reaction on her third infiltration for low back pain with bupivacaine, lidocaine, and methylprednisolone: she developed a vagal reaction, followed during the next 30 minutes by a pruriginous skin rash, followed by a tongue edema and a severe bronchospasm. Adrenalin was injected with a poor response. She was intubated and transferred to the intensive care unit for a few days and, finally, she recuperated completely. Skin-prick tests were done on two occasions. In the first session, no reactions were observed with triamcinolone and methylprednisolone at 1 mg/cc, but a rapid extending maculopapular erythema developed with a final diameter of 50 mm with lidocaine 0.1% (group 2) and 25 mm with procaine 2% (group 1): control 0 mm, histamine, 3 mm. She also complained of itchiness in the neck and shoulder, which resolved in the next 90 minutes. In the second session, a test with bupivacaine 0.0005% (group 2) gave a papule with a diameter of >5 mm, and a test with mepivacaine 0.001% (group 2) was negative: control, histamine, 3 mm; no subsequent tests with mepivacaine were done because she developed a cough and throat pruritus, voice modification, and a sensation of throat narrowing, that resolved with treatment. We reported a case of anaphylaxis to multiple LA (groups 1 and 2), possibly via an IgE-mediated mechanism.

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Key words: Allergy, anaphylaxis, drug, drug allergy, IgE-mediated, local anesthetic, skin tests

A 25-year-old nurse was evaluated in September. She was infiltrated for back pain with bupivacaine (Marcaine, Abbott Labs.), lidocaine (Xylocaine, Astra-Zeneca), and methylprednisolone acetate (DepoMedrol, Pharmacia & Upjohn). The two first infiltrations were without adverse effects, but after the third infiltration, she developed a vagal reaction, followed during the next 30 minutes by a pruriginous skin rash, and then after the next 30 minutes by a tongue edema and a severe bronchospasm. Adrenalin was injected with a poor response. She was intubated and transferred to the intensive care unit. The following day she was extubated and reintubated after a few hours because of recurrence of the edema. She was intubated for a few more days and finally she recuperated completely.

She is atopic, with allergy to multiple pollens, animals, possibly kiwi, and also penicillin and sulfamide. She also mentioned itchiness of her hands when she used latex gloves and sneezing when she removed the gloves. For her asthma, she took Flovent and Ventolin (Glaxo Wellcome) when needed. She also was on Dilaudid (Knoll), Naprosyn (Roche), and Flexeril (Merck

Frosst) for her back pain. The physical was normal and peak flow was normal at 425 L/m.

INVESTIGATION

Skin-prick tests were done with lidocaine 0.1% (group 2); procaine (novocaine) 2% (group 1); triamcinolone acetate (Kenalog, Westwood-Squibb), 1 mg/mL; and methylprednisolone acetate (DepoMedrol), 1 mg/mL. No reactions were observed with triamcinolone and methylprednisolone, but a rapid extending maculopapular erythema developed with the skin-prick test, with a final diameter of 50 mm with lidocaine and 25 mm with procaine (control, histamine 3 mm). She also complained of itchiness in the neck and shoulder, which resolved in the next 90 minutes; during that time, the local reaction to lidocaine and procaine were almost completely resolved. No other skin tests were done that day.

- Triamcinolone
—
- Methylprednisolone
—
- Lidocaine
++++ Rapid maculopapular edema of 50 mm (diameter)
- Procaine
++++ Rapid maculopapular edema of 25 mm (diameter)
- Control
—
- Histamine
+ Papule of 3 mm, with erythema

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She was reevaluated only a year later, because she became pregnant soon after her first visit. During that period, she developed lip swelling after giving a kiss to her husband after he received throat anesthesia with lidocaine. She was instructed not to use any local anesthetic: if local anesthesia was needed for dental surgery or to manage her delivery, Benadryl (Warner-Lambert) could be used topically¹⁻³; benzyl alcohol 0.9% could be used also.⁴

Skin-prick test with bupivacaine (Marcaine) 0.0005% (group 2) and mepivacaine (Carbocaine, Abbott Labs) 0.001% (group 2) were done: the test with bupivacaine gave a papule with a diameter of >5 mm, and the Carbocaine tests were negative (control, histamine, 3 mm); before we did the next dilution with Carbocaine (0.01%), she developed a cough and throat pruritus, voice modification, and a sensation of throat narrowing. Her blood pressure and pulsation were normal, and her O₂ saturation remained at ≥98%. Adrenaline, Benadryl, and methylprednisolone were administered, and she was evaluated by the anesthetist and observed in the intensive care unit for >8 hours; her condition resolved rapidly.

- Bupivacaine 0.0005%
++ 5-mm papule with erythema
- Mepivacaine 0.001%
—
- Control
—
- Histamine
+3-mm papule with erythema

PRODUCTS USED FOR TESTING

Lidocaine with methylparaben
Procaine with Na-bisulfite and chlorobutanol
Bupivacaine without preservative
Mepivacaine without preservative
Methylprednisolone with polyethylene glycol acetate, polysorbate 80, and benzylic alcohol
Triamcinolone acetonide with benzylic alcohol, carboxymethylcellulose, and polysorbate

DIAGNOSIS

Recommendation to avoid the use for herself of all local anesthetics of both groups, group 1 (benzoic acid esters, like benzocaine, procaine, and tetracaine) and group 2 (amides, like bupivacaine, dibucaine, lidocaine, and mepivacaine).

A year later she came with her atopic child. She mentioned that, inadvertently, she had had skin contact with lidocaine that spilled on the table, and rapidly developed angioedema of her hand but had no other systemic symptoms like diffuse hives, bronchospasm, nausea, vomiting, diarrhea, or hypotension.

CONCLUSION

In the literature, very rare cases of true allergic reactions to LA are reported. Frequently, this reaction is a contact dermatitis (type IV) reaction, almost always related to the esters group of anesthetics, rarely related to the amide group.⁵ Occasionally, it could be an anaphylactic (type I) reaction. Aldrete *et al.* reported a few cases of IgE-mediated reactions to local anesthetics, including eight cases with positive skin-prick tests and passive transfer (Prausnitz-Küstner) reactions implicating benzoic acid ester derivatives, but the initial reaction was not well defined.⁶ Some isolated cases of allergic reaction to lidocaine^{7,8} and other amide anesthetics⁹ were reported also. This study reported a case of anaphylaxis to LA, and the patient seemed to react to multiple LAs (groups 1 and 2), possibly *via* an IgE-mediated mechanism (she seem to be sensitized by her two previous infiltrations).

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