

SHORT COMMUNICATION



WILEY

Adverse reaction to local anaesthetics: Is it always allergy?

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Abstract

Objective: Local anaesthetics are very commonly used drugs in dentistry, and people who undergo procedures with local anaesthetics often refer adverse reactions that are not of allergic origin. Considering that in dentistry contact with allergens is very frequent, it is essential to assess the real incidence of allergy to local anaesthetics.

Subjects and Methods: We evaluated a group of 159 patients in whom adverse reaction occurred after procedures with local anaesthetics.

Results: The reactions between allergy to local anaesthetic (immediate and delayed) and certain symptoms presented by patients were investigated. Allergy to latex and chlorhexidine were investigated in all patients. Only one patient, who previously presented a constant erythema at the wrist after procedure with local anaesthetics, was positive to Mepivacaine patch test. Two patients were positive to latex and one to chlorhexidine.

Conclusions: The main finding of this study was that a reaction registered in the medical history and reported by a patient is rarely allergic but the use of vasoconstrictors or emotional factors may account for it. However, a complete allergological investigation is necessary for a correct diagnosis and future management.

KEYWORDS

adverse reactions, hypersensitivity, local anaesthetics

Local anaesthetics (LA) are commonly used into daily clinical practice for many operational procedures (in both primary care and dentistry and across all hospital specializations).

The literature reports few and controversial data on the prevalence of IgE-mediated allergic reactions to LA, as adverse reactions are common and may simulate a hypersensitivity reaction. The real incidence of allergic reactions to LAs is reported to be <1% (Berkun, Ben-Zvi, Levy, Galili, & Shalit, 2003; Gall, Kaufmann, & Kalveram, 1996; Giovannitti & Bennett, 1979). The major adverse drug reactions to LA, which often have a non-allergic mechanism, do include the following: toxic reactions, such as paraesthesia and dizziness caused by overdose; vasovagal reactions, such as hypotension and sinus bradycardia; anxiety responses; hyperventilation syndrome; and reactions

caused by concomitant adrenaline administration (tachycardia, palpitations, hyperventilation) (Adriani, 1972; Berkun et al., 2003).

We report our experience on 159 consensual patients (Table 1) who consecutively came to our observation for a suspected LA adverse reaction. The diagnostic approach followed the algorithm recommended by the ENDA/EAACI Drug Allergy Interest Group (Aberer et al., 2003; Brockow et al., 2002, 2013; Demoly et al., 2014; Yilmaz, Ozdemir, Aydin, & Celik, 2018). LA tests included skin prick test (SPT), intradermal test (IDT) and subcutaneous provocation test (SCT) with the suspected LAs. The patients were advised not to take antihistamines in the 7 days prior to each one of the tests mentioned above. LAs without vasoconstrictors were used to avoid the appearance of false-positive results.

At first, positive (histamine chloride 1 mg/ml) and negative (0.9% sodium chloride) controls on the anterior surface of the patients' forearms were verified. Undiluted SPT with the suspected LA was then performed; in the case of negative SPT, IDT using 1/100, 1/10 dilutions was carried out; in the case of negative IDT, we moved to SCT with increasing subcutaneous doses (0.10 ml of 1/10 dilution, 0.10 ml undiluted and 1 ml undiluted) on the lateral surface of the patients' arms. In all patients, we excluded concomitant allergy to latex (by the execution of latex SPT and specific latex IgE, the latter in case of positivity or in doubtful cases) and to chlorhexidine. In patients presenting delayed reactions to LAs, patch tests were performed by application on the patient's back.

No positive skin tests to LA were recorded. Two patients presented allergy to latex and one to chlorhexidine. Only one patient presented positive patch test to mepivacaine, which had previously caused cutaneous delayed reaction (Table 1).

Our data suggest that allergy to LAs is rare and a negative skin test excludes an IgE-mediated hypersensitivity reaction. In the absence of an IgE-mediated hypersensitivity reaction, the risk of anaphylaxis to a LA, both to the LA reported to have caused an adverse reaction and to the alternatively tested LA, is not different from the

general population. In other words, once that LA allergy has been excluded, no specific contraindications to the use of any LA should be considered. Furthermore, in the absence of previous adverse reactions showing signs and symptoms suggestive of hypersensitivity reaction, no tests are recommended (Aberer et al., 2003; Brockow et al., 2002, 2013; Demoly et al., 2014; Yilmaz et al., 2018). Thus, in order to correctly diagnose and manage patients with LA adverse reaction, it would be helpful that anaesthesiologists or healthcare professionals taking care of a patient during the appearance of any adverse reactions accurately describe the clinical manifestations, including date and time of symptoms appearance and their duration, collect information on the suspected drug and on other drugs concomitantly administered. The lack of those details heavily hampers the correct diagnostic work-up.

Furthermore, as suggested by our report, the evaluation of patients with a suspected LA allergic reaction should include the identification of other allergens, to which the patients are exposed during a procedure, is an important aspect in the clinical management of these cases. In particular, the allergens' panel to be evaluated should include the following: medications administered during, or immediately before/after the procedure (e.g., antibiotics, analgesics), latex and chlorhexidine (Kelly & Walsh-Kelly, 1998; Schwartz & Sher, 1985). In the cases characterized by perioperative anaphylaxis, mast cell disorders should be always ruled out (Malito et al., 2015).

In conclusion, our data confirm that LA allergy is rare; in order to avoid unnecessary tests and preventive measures, it is of utmost importance that all the involved healthcare professionals are aware about the correct approach to a suspected LA allergy.

TABLE 1 Overview of study population and main results

Variable	n°
Study population, n	159
Female/male	125 (78.6%)/ 34 (21.4%)
Referral reason for LA Testing	
Suspected allergy	68 (42.8%)
Anxiety	56 (35.2%)
Screening in patients with history of other allergic diseases	35 (22%)
Suspected LA	
Mepivacaine	48
Lidocaine	22
Articaine	16
Bupivacaine	3
Ropivacaine	4
Benzocaine	1
Tetracaine	1
Oxy-bupivacaine	1
LA tested with negative results	
Mepivacaine	135
Lidocaine	64
Bupivacaine	23
Ropivacaine	7
Positive results	
Chlorhexidine	1
Latex	2
Mepivacaine (patch test)	1

AUTHOR CONTRIBUTIONS

FF, GS and MC conceived the study and drafted the first version of the manuscript. FF, SM, PF and FiF collected the data. All the authors contributed to the data analysis and to the final draft of the manuscript. All the authors read and approved the submitted manuscript.

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