

Allergic reaction caused by local anesthetic agents belonging to the amide group

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CASE REPORT

We report the case of a 30-year-old woman who had an allergic reaction 3 months before consulting our service. The initial reaction consisted of pruritus in the palms of the hands and soles of the feet, which was followed by a generalized urticarial reaction. The patient did not have angioedema, asthma, hypotension, or any other symptom. The reaction took place 20 minutes after the administration of an unknown local anesthetic (LA) agent, which was applied for the removal of a sebaceous cyst in the patient's hand. No other drugs were administered. The patient had no personal or family history of allergy. The blood cell count and biochemical profile were normal, as was the chest x-ray. The total serum IgE was 5 kU/L, and skin prick test results were negative in response to an aeroallergen and food commercial battery, including latex (Alergia e Inmunología Abello SA, Madrid, Spain).

After obtaining the patient's written consent, an allergy study was carried out. Skin tests were performed with commercial LAs: lidocaine (Braun Medical SA, Barcelona, Spain), mepivacaine (Braun Medical), bupivacaine (Inibsa SA, Barcelona, Spain), and procaine (Serra Pamies SA, Tarragona, Spain). The concentrations for the prick and intradermal tests with these LA agents were selected as recommended by Schatz.¹ Positive (histamine) and negative (normal saline solution) controls were also carried out.

Skin prick test results were negative for all the reagents except histamine. Positive intradermal test results (dilution 1:100)—in every case pseudopoda and pruritus—were obtained for lidocaine (15 mm wheal diameter), mepivacaine (22 mm), and bupivacaine (18 mm). The results of skin tests with saline solution and the procaine were negative.

According to the method previously described,² we were unable to detect specific IgE antibodies to these LA agents. Briefly, cyanogen bromide-activated paper disks were incubated with different dilutions of LAs. After washing the disks, a radioimmunoassay was carried out according to standard protocol for detecting specific circulating IgE.

To ensure that the LA agents that produced the positive skin test results were really able to cause a reaction, we carried out placebo-controlled, double-blind subcutaneous challenge tests according to the protocol previously reported.¹ The challenge test results were positive for both undiluted mepivacaine and lidocaine at doses of 0.1 ml, causing an immediate urticarial reaction, which was successfully treated with subcutaneous administration of epinephrine. Results of the placebo (saline solution) and procaine challenges were negative. It was not

Abbreviation used

LA: Local anesthetic

possible to perform the bupivacaine challenge, because the patient refused it after the second positive challenge test response.

DISCUSSION

LA agents are among the most commonly used drugs in medicine, and a variety of adverse reactions to them has been reported.¹ The allergic reactions have usually been described as contact dermatitis, related to procaine and other anesthetics belonging to the benzoic acid ester group. However, true type I allergic reactions are exceptional (fewer than 1%) and have not been well documented in the literature.¹⁻⁴ Immediate reactions to commercial LAs have also been reported as being due to preservatives added during the manufacturing process (e.g., sulfites, parabenes).

In this case, and on the basis of the placebo-controlled, blind challenge test results, we have been able to demonstrate the existence of adverse reactions caused by LA agents. Preservatives were ruled out as the etiologic agents, because the manufacturer (B. Braun Medical SA) had previously certified that these drugs were made up of only NaCl, water, and the LA substance itself with no preservatives. Both the characteristics of the reactions and the positive intradermal skin test results made us strongly suspect that a type I allergic reaction was the mechanism involved; however, we were unable to detect specific IgE antibodies to these LA agents.

Another important fact in this case is that the patient reacted to several LA agents belonging to the amide group, which suggests that cross-reactivity may have existed among LA agents in the amide group; this occurrence has been previously described in cases of contact dermatitis.⁵

In summary, we have reported reactions caused by several LA agents belonging to the amide group; these reactions were demonstrated by placebo-controlled, double-blind challenge tests, and a type I allergic reaction was the mechanism suspected on the basis of both the immediate urticarial reaction and the positive intradermal test results.

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