Actas Dermosifiliogr. 2008;99:407-10

CASE REPORTS

Allergic Contact Dermatitis From Lidocaine in Ear Drops

E. Gómez-de la Fuente,[a] A. Rosado,[b] J. G. Álvarez,[a] and F. J. Vicente[a]

[a]Unidad de Dermatología and [b]Unidad de Alergia, Fundación Hospital Alcorcón, Alcorcón, Madrid, Spain

Abstract. Lidocaine is one of the most widely used local anesthetics. It can be administered topically or parenterally. Allergic contact dermatitis from lidocaine is uncommon, but an increasing number of cases have been reported in recent years. We present the case of a 66-year-old man who presented with acute dermatitis on the pinna and left cheek after applying ear drops. Patch tests were positive for the product itself and for lidocaine in the ear drops, thereby confirming the diagnosis of contact dermatitis from lidocaine.

Key words: allergic contact dermatitis, lidocaine, patch tests.

ECCEMA ALÉRGICO DE CONTACTO POR LIDOCAÍNA CONTENIDA EN UNAS GOTAS ÓTICAS

Resumen. La lidocaína es uno de los anestésicos locales más ampliamente utilizado, pudiéndose administrar de forma tópica o parenteral. Los eccemas alérgicos de contacto a la lidocaína son poco frecuentes, pero en los últimos años se están incrementando. Exponemos el caso de un varón de 66 años que presentó un eccema agudo en el pabellón auricular y la mejilla izquierda tras la aplicación de unas gotas óticas. Las pruebas epicutáneas fueron positivas para el producto «tal cual» y para la lidocaína contenida en dichas gotas óticas, confirmándose el diagnóstico de eccema alérgico de contacto por lidocaína.

Palabras clave: eccema alérgico de contacto, lidocaína, pruebas epicutáneas.

Introduction

Local anesthetics are widely used medications and can be administered topically, parenterally, or sometimes both ways. While topical application can lead to allergic contact dermatitis, injection of local anesthetics can cause more severe problems, such as urticaria, anaphylactic shock, and vasculitis.[1] Topical application has traditionally been limited to anesthetics that are not used parenterally, such as benzocaine, in order to avoid allergic cross-reaction with related drugs. However, topical anesthetics that can also be administered parenterally are increasingly common, the most well known being the eutectic mixture of local anesthetics (prilocaine combined with lidocaine), known commercially as EMLA cream. This combination is frequently used in minor interventions or laser treatment, although many other products are available. We report a case of allergic contact dermatitis brought about by lidocaine as a component of ear drops.

Correspondence:
Enrique Gómez de la Fuente
Unidad de Dermatología
Fundación Hospital Alcorcón
C/ Budapest, 1
28922 Alcorcón, Madrid, Spain
egomezf@fhalcorcon.es

Manuscript accepted for publication June 7, 2007.

Case Description

A 66-year-old man with no known allergies or clinical history of interest was referred to our department with very itchy, exudative, erythematous lesions on the pinna and left cheek. These lesions took a week to disappear after a crust had formed. Pain and itching in the area had led the patient to administer 2 drops of Panotile ear drops every 6 hours during the previous 3 days. These drops were composed of polymyxin B, neomycin, fludrocortisone acetate, lidocaine hydrochloride, benzalkonium chloride, and propylene glycol. When the patient consulted 1 month later, only mild residual erythematous brownish coloring could be observed.

The diagnosis of suspected allergic contact dermatitis led us to perform patch tests according to the guidelines of the Spanish Contact Dermatitis Research Group (abbreviated in Spanish to GEIDC), using the GEIDC standard allergen series, Panotile, and the individual components of Panotile (Table 1). A reading at 48 and 96

Table 1. Results of Patch Testing

Allergens	*48 h*	*96 h*
Standard GEIDC series	–	–
Panotile +	++	
Lidocaine, 5%, pet	+ +	+ +
Polymyxin B, 5%, pet	–	–
Fludrocortisone, 0.1%, pet	–	–
Benzalkonium chloride, 0.1%, aq	–	–
Propylene glycol, 5%, pet	–	–
Amide anesthetics		
Ropivacaine, 0.5%, aq	–	–
Mepivacaine, 2%, aq	–	–
Bupivacaine, 0.25%, aq	–	–
Prilocaine, 5%, aq	–	–

Abbreviations: aq, aqueous solution; GEIDC, Spanish Contact Dermatitis Research Group; pet, petrolatum.

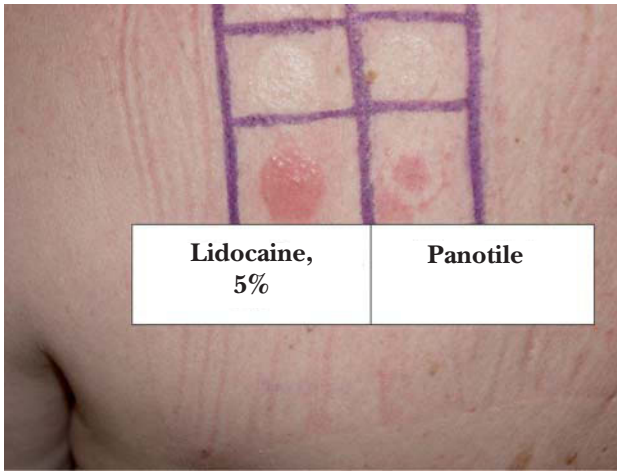

Figure 1. Positive patch tests with lidocaine and Panotile.

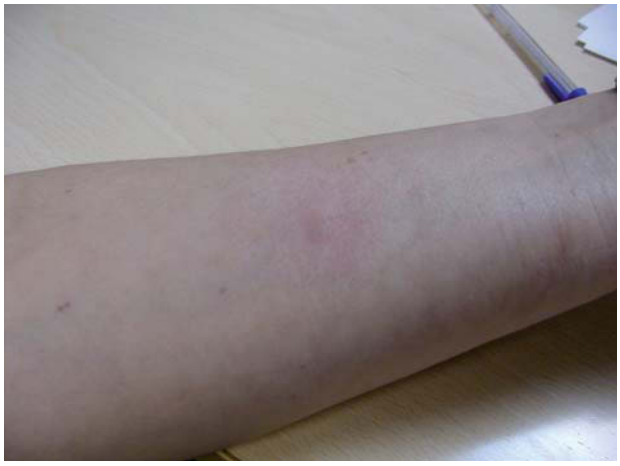

Figure 2. Intradermal application at 48 hours with lidocaine diluted to 0.1%.

hours was positive both for the product itself and for lidocaine (++) (Figure 1). The results of patch testing with other amide local anesthetics using commercial concentrations and excipients (including ropivacaine, prilocaine, bupivacaine, and mepivacaine) were negative, as were those of a subsequent skin prick test with lidocaine, 1%, in saline solution. Intradermal application of lidocaine, 0.1%, was negative at the immediate reading and at 24 hours, although it was positive at 48 hours in the form of an induration that lasted 5 days (Figure 2). The results of skin prick testing and intradermal application with an immediate and a late reading at 24 and 48 hours with mepivacaine, 2%, ropivacaine, 1%, bupivacaine, 0.25%, and prilocaine, 5%, were negative. Parenteral challenge with mepivacaine, 2%, and bupivacaine, 0.25%, up to 1 mL were negative, thus enabling the patient to use these anesthetics afterwards. Topical and parenteral administration of lidocaine were prohibited.

Discussion

Local anesthetics have traditionally been divided into 2 groups according to their chemical structure: esters and amides (Table 2). Allergic reactions to anesthetics from the ester group have been reported more often than those of the amide group, possibly due to their widespread use and to the formation of the highly antigenic para-aminobenzoic acid group after hydrolysis of the anesthetic molecule.[2] Nevertheless, increasingly widespread use of amide

Table 2. Classification of Topical Anesthetics

Amides	*Esters*	*Miscellaneous*
Lidocaine	Para-aminobenzoic acid esters	Pramoxine
Mepivacaine	Benzocaine	Dimethisoquin
Dibucaine	Procaine	Phenacaine
Etidocaine	Butethamine	Dyclonine
Bupivacaine	Proparacaine	
Prilocaine	Benzoic acid esters Cocaine hydrochloride Hexylcaine Tetracaine Meta-aminobenzoic acid esters Cyclomethycaine	

Table 3. Topically Applied Products Containing Lidocaine That Are Sold in Spain

Anginovag. Aerosol (Grupo Ferrer)
Anso. Rectal cream (Lacer)
Dermovagisil. Cream (Combe Europa)
Emla. Cream (Astra-Zeneca)
Hepro. Applicators (Cassen Fleet)
Kanapomada. Cream (Medical)
Oraqix. Periodontal gel (Dentsply Detrey GmbH)
Otomidrin. Ear drops (Fardi)
Panotile. Ear drops (Zambon)
Proctium. Rectal cream (Esteve)
Strepsils lidocaine. Tablets (Boots Healthcare)
Synalar Rectal. Cream (Astellas Pharma)
Trigón Rectal. Rectal cream (Bristol Myers Squibb)
Xylonibsa. Gel, aerosol, cream (Inibsa)

anesthetics has led to a rise in the number of type I and type IV allergic reactions (allergic contact dermatitis).

Lidocaine (Xylocaine, lignocaine) is probably the most widely used member of the amide group, not only as a topical and injectable anesthetic, but also intravenously in the treatment of cardiac arrhythmia. Allergic reactions to lidocaine are uncommon. However, as mentioned, they are on the increase, and this has led some groups to include this antigen in their standard series; the North American Contact Dermatitis Group (NACDG), for instance, has done so since 2001. Between 2001 and 2002, the NACDG obtained 12 positive results from 1030 patients who underwent patch testing with lidocaine (1.2%), whereas Mackley et al[3] obtained 4 positive results from 183 patients tested (2%). These data suggest that sensitization to this anesthetic may be more widespread than that shown by published cases. The above data contrast with those on the allergens of the European standard series, which only includes benzocaine, 5%, or the GEIDC standard series, whose caine mix includes benzocaine, procaine, dibucaine (cinchocaine), and tetracaine, that is, only 1 member of the amide group, dibucaine, which is seldom used. Further studies will be necessary to elucidate whether it would be useful to modify these series or include amide anesthetics that are more widely used or more likely to produce sensitization.

Most published cases of allergic contact dermatitis caused by lidocaine involve antihemorrhoidal creams containing the substance, although it is a component of several products (Table 3). Allergic contact dermatitis has also been reported after the use of anesthetic products for sores, sunburn, and after injections during surgery.[4-7] Curiously, despite the widespread use of EMLA anesthetic cream, which contains lidocaine and prilocaine, the scant reports of allergic contact dermatitis involve sensitization to prilocaine and not to lidocaine.[8]

Cross-reactivity between different anesthetics of the ester group is common, although we have only found 3 published reports of positive results with anesthetics from both groups, and these were considered more a concomitant sensitization than a cross-reaction.[4,9] Furthermore, cross-reactions within the amide group are very uncommon, despite the similarity between some members.[10-12]

All patients with suspected reactions to topical anesthetics should undergo patch testing. The concentrations to be used in patch testing with the other anesthetics of the amide group have not been clearly standardized. Our approach was similar to that of other authors[13,14]—we used the concentrations recommended by the manufacturer. Subsequent intradermal application and a challenge test enabled us to rule out sensitization to these anesthetics. Given that these anesthetics are widely used, alternatives should be studied through patch testing, skin prick testing, and intradermal application followed by a challenge test—as in our approach—to confirm tolerance to anesthetics that could be used in the future.

Finally, as the incidence of these reactions is likely to increase owing to more widespread use of the products, we would like to stress how important it is to be aware of these reactions, not only for medical reasons, but also because of the possible medicolegal consequences. They should be studied on an individual basis by experts, who will choose the different tests to be carried out.

Conflict of Interests

The authors declare no conflicts of interest.

References

1. Giménez-Arnau AM. Hipersensibilidad retardada inducida por anestésicos locales. Act Dermatolog. 2004;43:625-34.
2. Campbell JR, Maestrello CL, Campbell RL. Allergic response to metabisulfite in lidocaine anesthetic solution. Anest Prog. 2001;48:21-6.
3. Mackley CL, Marks JG Jr, Anderson BE. Delayed-type hypersensitivity to lidocaine. Arch Dermatol. 2003;139:343-6.
4. Weightman W, Turner T. Allergic contact dermatitis from lignocaine: report of 29 cases and review of the literature. Contact Dermatitis. 1998;39:265-6.
5. Kernekamp AS, Van Ketel WG. Contact allergy to lidocaine. Contact Dermatitis. 1979;5:403.
6. Whalen JD. Delayed-type hypersensitivity after subcutaneous administration of amide anesthetic. Arch Dermatol. 1996;132:1256-7.

7. Gómez-Vázquez M, Fernández-Redondo V, Toribio J. Dermatitis alérgica de contacto a tratamientos tópicos. Actas Dermosifiliogr. 2003;94:144-9.
8. Pérez-Pérez LC, Fernández-Redondo V, Ginarte-Val M, Paredes-Suárez C, Toribio J. Allergic contact dermatitis from EMLA cream in a hemodialyzed patient. Dermatitis. 2006;2:85-7.
9. Jovanovic M, Karadaglic D, Brkic S. Contact urticaria and allergic contact dermatitis to lidocaine in a patient sensitive to benzocaine and propolis. Contact Dermatitis. 2006;54:124-6.
10. Waton J, Boulanger A, Trechot PH, Schmutz JL, Barbaud A. Contact urticaria form EMLA cream. Contact Dermatitis. 2004;51:284-7.
11. Sánchez-Morillas L, Laguna JJ, Reano M, Gómez-Tembleque P, Rojo E. Delayed-type hypersensitivity to mepivacaine with cross-reaction to lidocaine. Contact Dermatitis. 2005;53:352-3.
12. Sinead ML, Collins P. Photocontact allergy to oxybenzone and contact allergy to lignocaine and prilocaine. Contact Dermatitis. 2006:54;173-4.
13. Astarita C, Gargano D, Romano C, Cutajar M, Manguso F, Montanaro D, et al. Long term absence of sensitization to mepivacaine as assesed by a diagnostic protocol including patch testing. Clin Exp Allergy. 2001;31:1762-70.
14. Kanerva L, Alanko K, Estlander T, Jolanki R. Inconsistent intracutaneous and patch test results in a patient allergic to mepivacaine and prilocaine. Contact Dermatitis. 1998;39:197-9.