

CONTACT POINT

Two cases of allergic contact dermatitis to different elements in identical ultrasound gels

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Adverse skin reactions caused by ultrasound gels are uncommon, and are mostly related to allergic contact dermatitis (ACD) or contact urticaria. Most reactions have been associated with propylene glycol, Euxyl K 400 components, and, more rarely, other preservatives. We report two cases of ACD caused by different ingredients in identical ultrasound gels.

CASE REPORTS

A 60-year-old male with carotid stenosis, on two occasions, after application of Transonic Ultrasound Gel* (Telic, Barcelona, Spain) for

carotid Doppler, developed an early dermatitis (within first hour) with pruritic, punctate erythematous lesions on the neck area that evolved to spontaneous resolution in 24-48 hours.

A 43-year-old woman had the same ultrasound gel applied before laser hair removal, as well as EUROGINE vaginal gel (EUROGINE S.L., Barcelona, Spain), of identical composition, for gynaecologic examinations. She had an itchy micropapular rash in the area of application, 24 hours after the use of aforesaid gels, that lasted for several days.

However, at a later period, both patients tolerated Aquasonic Gel (Parker, Fairfield, NJ, USA), with undisclosed composition.

TABLE 1 Results of skin tests at D2 / D4

	Patient 1 (D2/D4)	Patient 2 (D2/D4)
Open tests	Transonic gel (+) Aquasonic gel (-)	Transonic gel (+) Aquasonic gel (-)
Occlusive patch tests	Transonic gel (++/+++) Aquasonic gel (-/-)	Transonic gel (++/+++) Aquasonic gel (-/-)
Standard series	Formaldehyde (++/+++) Quaternium-15 (++/+++) Diazolidinyl urea (++/+++) Imidazolidinyl urea (++/+++) Methylisothiazolinone 2% aq. (+++/+++)	(-/-)
Acrylate series	(-/-)	Methyl methacrylate (-/+)
Propylene glycol 5% pet.	(-/+)	(-/-)
Ethylenediaminetetraacetic acid	Not tested	(-/-)
Carbomer 40P 0.5% aq.	(-/-)	(+++ /+++)
Carbomer 40P 0.75% aq.	(-/-)	(+++ /+++)
Carbomer 40P 0.5% pet.	(-/-)	(+++ /+++)

Abbreviation: D, day.

SKIN TESTS

Patch tests were performed in both patients with Transonic and Aquasonic 100 gels, the European baseline series (TRUE Test), acrylate series (allergEAZE), and propylene glycol 5% pet. (all from SmartPractice, Barsbüttel, Germany), as well as 40P-carbomer (supplied by Telic), 0.5%-0.75% aq. and 0.5% pet. Patch tests were applied on the upper back for 2 days using Curatest (Lohmann & Rauscher, Rengsdorf, Germany). Readings were performed on day (D) 2 and D4 according to international guidelines. Results are presented in Table 1. Ten healthy controls were negative for the ultrasound gels tested and for carbomer 40P in every concentration and vehicle.

DISCUSSION

We report two cases of ACD caused by unrelated ingredients in ultrasound gels of identical composition. In case 1, ACD was due to formaldehyde-releasing preservatives in the gel (imidazolidinyl urea); this patient was also sensitized to methylisothiazolinone, a component not disclosed in composition; remarkably, isothiazolinones are a frequent component in other ultrasound gels,² sometimes unlabelled.³

The second case was due to 40P carbomer (2-propenoic acid homopolymer) used in the gel as an emulsifier. The trade name carbomer labels polyacrylic acid, and includes a series of synthetic polymers with a reported low potential for skin irritation or sensitization.⁴ Depending on chemical characteristics and manufacturing conditions, various grades of carbomers are available for different purposes, and some of them have been described as a rare cause of ACD.⁵ To our knowledge, this is the first reported case of sensitization to carbomers in an ultrasound gel; and moreover, the first case of ACD caused by this particular 40P-carbomer. This patient did not show cross-reactivity with other acrylates.

In conclusion, ultrasound gels can cause ACD due to different constituents, even in gels of identical composition. Therefore, all and every labelled ingredient should be tested in the suspected cases.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest regarding the content of this manuscript.

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ENDNOTES

* Transonic and EUROGINE ingredients: water, propylene glycol, carbomer, diazolidinyl urea, methyl and propyl parabens, and disodium ethylenediaminetetraacetic acid.

AUTHOR CONTRIBUTIONS

María Dolores Martínez-Antón: Conceptualization; data curation; investigation; methodology; supervision; validation; writing-original draft. **Cristina Galán:** Investigation; methodology; validation; writing-original draft. **Javier Sanchez de Vicente:** Investigation; methodology; validation. **Aritza Seguro:** Investigation; methodology; validation. **Yolanda Seras:** Investigation; methodology; validation; visualization. **Eduardo García-Lirio:** Validation; visualization. **Begoña Irazábal:** Investigation; validation; visualization. **Pedro Gamboa:** Investigation; methodology; supervision; validation; writing-review & editing.

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