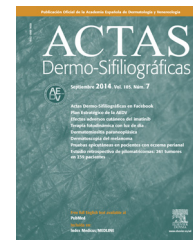




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ORIGINAL ARTICLE

Descriptive Study of Sensitization to Methylchloroisothiazolinone and Methylisothiazolinone in a Skin Allergy Unit[☆]



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KEYWORDS

Methylisothiazolinone;
Methylchloroisothiazolinone;
Sensitization;
Allergic contact dermatitis;
Patch tests

Abstract

Background: Methylchloroisothiazolinone (MCI) and methylisothiazolinone (MI) are heterocyclic compounds used as preservatives in cosmetic and industrial products. They continue to be common allergens, causing positive patch test reactions in 2% to 4% of patients tested.

Material and methods: We searched the database at our skin allergy unit for all cases of sensitization to MCI/MI and MI diagnosed between January 1980 and March 2013.

Results: Patch tests were performed with MCI/MI in 8705 patients and with MI in 404 patients. In total, 222 patients (2.55%) were sensitized to MCI/MI and 21 (5.19%) were sensitized to MI. The incidence of MCI/MI cases peaked between 1998 and 2005 and again between 2009 and 2013. Of the 222 patients with MCI/MI sensitization, 142 were women (64%) and 49 were men (36%); the mean age was 43 years. The most frequently affected areas were the hands (54% of cases), the arms (36%), and the face (35%); 75.67% of cases were due to cosmetics and 2.25% were due to paint. Of the 21 patients with MI sensitization (mean age, 50 years), 12 were women (57%) and 9 were men (43%). The most common site of involvement in this group was the face (71% of cases), followed by the arms (38%) and the hands (29%). All the cases were due to cosmetics.

Conclusions: Our data show that sensitization to the combination of MCI and MI and MI alone has increased in recent years. It would appear to be necessary to add MI to the baseline patch test series, although the test concentration has yet to be determined.

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PALABRAS CLAVE

Metilisotiazolinona;
Metilcloroisotiazolinona;
Sensibilización;
Dermatitis alérgica
de contacto;
Pruebas epicutáneas

Estudio descriptivo de la sensibilización a metilcloroisotiazolinona/metilisotiazolinona en una unidad de alergia cutánea

Resumen

Introducción: La metilcloroisotiazolinona (MCI) y la metilisotiazolinona (MI) son compuestos heterocíclicos que se emplean como conservantes en cosméticos y en productos industriales. Actualmente continúan siendo alérgenos frecuentes con tasas de sensibilización que están en torno al 2-4% de los pacientes a los que se les realizan pruebas epicutáneas.

Material y métodos: Se realizó una búsqueda de todos los casos de sensibilización a MCI/MI y MI diagnosticados de enero de 1980 hasta marzo del 2013 utilizando la base de datos de la sección de alergia cutánea.

Resultados: Se realizaron pruebas epicutáneas con la mezcla MCI/MI a 8.705 pacientes y la MI aislada a 404 pacientes. Se identificaron 222 pacientes (2,55%) con sensibilización a MI/MCI y 21 pacientes (5,19%) con sensibilización a MI. En cuanto a MCI/MI, se observó un primer pico de incidencia de la sensibilización entre los años 1998 y 2005 y un segundo pico desde 2009 hasta 2013. Ciento cuarenta y dos eran mujeres (64%) y 49 hombres (36%), con una edad media de 43 años. La localización más frecuente fueron las manos (54%), seguidas de los brazos (36%) y la cara (35%). La principal fuente de sensibilización fueron los cosméticos (75,67%), mientras que las pinturas representaron la fuente de sensibilización en el 2,25% de los pacientes. En la MI 12 eran mujeres (57%) y 9 hombres (43%), con una edad media de 50 años. La localización de las lesiones más frecuente fue la cara (71%), seguido de los brazos (38%) y las manos (29%). La fuente de sensibilización en todos los pacientes fueron los cosméticos.

Conclusiones: Los datos de nuestro estudio demuestran un incremento en la prevalencia de la sensibilización a la MCI/MI y MI en los últimos años. Parece necesaria la incorporación del parche con MI en la batería estándar a una concentración todavía no establecida.

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INTRODUCTION

Isotiazolinones are heterocyclic compounds that are used as biocides because of their antimicrobial properties. The 6 known types of isotiazolinones are methylisothiazolinone (MI), methylchloroisothiazolinone (MCI), benzisothiazolinone, octylisothiazolinone, dichlorooctylisothiazolinone, and butylbenzothiazolinone. These compounds are used as preservatives in a large number of cosmetic products, such as moisturizing cream, gel, shampoo, face masks, makeup, and wet wipes. They can also be found in detergent, clothing conditioner, cleaning fluid, pesticide, water-based paint, lubricant, cutting oil, and air conditioning systems.

MCI/MI was authorized for use as a preservative in 1980. During the following decade, the frequency of allergic contact dermatitis to MCI/MI became epidemic, with sensitization rates higher than 5%.¹ Consequently, in 1990, the maximum authorized concentration in cosmetic products was reduced to 7.5 ppm in leave-on products and 15 ppm in rinse-off products.² Sensitization rates remain high, at around 2-4%.³

MI is less effective as a biocide and, therefore, has to be used at higher concentrations than MCI. MI has been used in industrial products since the first decade of the century; since 2005, it can be used alone as a preservative in cosmetic products at 100 ppm.⁴ MI was initially thought to be a safer alternative, given that MCI was a significantly more potent allergen than MI.⁵ However, cases of sensitization to MI alone were subsequently reported. The first cases of sensitization to MI in industrial products were reported in 2004

and 2006^{6,7}; the first cases of allergic contact dermatitis to MI in cosmetic products were reported in 2010.⁸

The currently used patch test (Kathon CG) contains a 3:1 mix comprising MCI (1.125%) and MI (0.375%), magnesium nitrate, magnesium chloride, and water. It was included in the standard series of the Spanish Contact Dermatitis and Skin Allergy Research Group (GEIDAC) in 1990. In our center, patch testing with MCI/MI at 100 ppm in water has been used since 1987, and MI alone at 500 ppm in water has been used since November 2011.

In the present study, based on all cases of sensitization to MCI/MI and MI diagnosed in the skin allergy unit of our dermatology department, we retrospectively analyze patient characteristics and the place, source, and relevance of the sensitization.

Material and Methods

We performed a search for all cases of sensitization to MCI/MI and MI diagnosed in the Skin Allergy Unit of the Dermatology Department of Hospital General Universitario de Valencia, Valencia, Spain. Information was retrieved from the database of all patients who underwent patch testing from January 1980 to March 2013. The variables recorded were as follows:

- *Demographic details:* age and sex
- *Personal history:* occupation and personal and/or family history of atopy

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