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Severe contact urticaria, mimicking allergic contact dermatitis, due to a surgical mask worn during the COVID-19 pandemic

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Conflict of interest: None to declare.

Key words: surgical mask; polypropylene; case report; contact urticaria, patch test.

This article has been accepted for publication and undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process which may lead to differences between this version and the [Version of Record](#). Please cite this article as doi: [10.1111/cod.13768](https://doi.org/10.1111/cod.13768)

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In the context of the COVID-19 pandemic, the massive use of personal protective equipment, such as face masks and gloves, and the use of frequent hand sanitation with alcohol-based products, has determined several skin problems such as irritant contact dermatitis and the flare-up of previous dermatoses like rosacea and acne¹⁻⁴.

We report an unusual case of contact urticaria in a young girl, triggered by the use of surgical masks.

CASE REPORT

A 7-year-old atopic girl presented with an intermittent, erythematous, itching rash and swelling on the face after wearing a disposable, polypropylene surgical mask. The dermatitis had been present three months. Symptoms and signs developed after 30-60 minutes of contact and progressively resolved completely in 8-24 hours.

The dermatitis appeared both after the use of new masks and of re-used washed masks.

The facial dermatitis was mostly located in the areas in contact with the mask, extending at times beyond the sites of contact and sometimes involving the periocular area; on some occasions the dermatitis assumed a purpuric aspect (Figure 1). No previous topical medicaments or over the counter treatment had been used by the patient.

A provocation test, performed on the arm, was positive in 30 minutes.

The same mask worn in other body regions, such as the elbow, evoked the same clinical manifestations, while other cotton fabric masks did not cause any symptom.

Patch tests were performed with the Società Italiana di Dermatologia Allergologica Professionale e Ambientale (SIDAPA) baseline series (F.I.R.M.A., Florence, Italy).

Patch test chambers (Van der Bend, Brielle, The Netherlands) were applied on the upper part of the patient's back. The readings on day (D) 2, D3 and D4, according to the Italian guidelines⁵, showed no reaction.

Further patch tests were performed with fragments of the patient's mask (inner coating and strap) tested as is, and preventively moistened with a saline solution, with negative reaction. Contact urticaria was therefore diagnosed. No therapy was prescribed due to the transient course of the manifestation.

DISCUSSION

Reviewing the literature, the continuous use of surgical masks, in particular in healthcare workers, could cause irritant and allergic contact dermatitis, exacerbation of acne and infections, contact urticaria^{2, 3}.

The causal agents for contact urticaria may be fragrances, flavourings, medications, preservatives and disinfectants⁶.

Delayed onset cases of contact urticaria due to formaldehyde have been described⁷. Repeated open application on healthy skin, or single applications of formaldehyde on slightly diseased skin, evoked itching and wheals while patch test was negative. This pathogenic mechanism cannot be excluded in our case as the girl's mother denied further tests.

In the present case, although the clinical presentation suggested allergic contact dermatitis, the short time taken for resolution of the lesions and the negative patch tests excluded the possibility of an allergic contact dermatitis.

However the role of the surgical mask in provoking the lesions was ascertained with the provocation test and a positive stop-restart test. The role of pressure (inducible pressure urticaria) was excluded because other cotton fabric masks did not cause any manifestation.

The diagnosis of contact urticaria is challenging, especially when undetectable agents are undeclared or unknown. In this particular case we hypothesize that an unknown component of the surgical mask used by the patient is responsible for the severe contact urticaria it caused.

FIGURE LEGEND

FIGURE 1. Diffuse erythema and swelling with purpuric aspects of the cheeks and extension to the right periorbital region.



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