

Hydrocolloid blister plaster decreases allergic contact dermatitis to Freestyle libre and isobornyl acrylate

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Case report

Our patient, a 12 year-old boy, known with diabetes mellitus type 1 since 6 years, started usage of the Flash Glucose Monitoring system (iscCGM; Freestyle Libre, Abbott) in June 2016 (Figure 1a). In November 2016 he complained the first time about itch underneath his glucose sensor, which progressively worsened, so that after some days the sensor had to be removed. The skin under the plastic case showed erythema, pustules and small yellowish vesicles (Figure 1b). His diabetes physician recommended applying a skin barrier film spray, Cavilon, underneath the sensor. However, this did not prevent his allergic contact dermatitis (ACD).

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We performed patch tests with allergens from a baseline series and a plastics and glues series, following recommendations of the German Contact Dermatitis Research Group (Deutsche Kontaktallergie Gruppe; <http://dkg.ivdk.org/>). Also, we tested isobornyl acrylate (IBOA) 0.1% pet., prepared in the laboratory of the Department of Dermatology and Allergology, Ludwig-Maximilian-University, Munich. Following occlusion for 2 days, all patch test reactions were read, according to guidelines, on day (D) 2 and D3. Our patient only showed a ++ positive reaction to IBOA 0,1%.

We provided our patient with Hansaplast blister plaster from Beiersdorf (Hamburg, Germany). Two blister plates were placed between the skin and the sensor, overlapping, thereby preventing potential allergens from penetrating into the skin (Figure 1c). In our observation period from 9 months, our patient was almost always able to keep his Freestyle Libre for the full application time of 14 days (Figure 1d).

Discussion

Skin irritation to modern diabetes devices from occlusion, sweating under the sensor, or tearing off the adhesive seem to be very common, but are mostly controllable. However, some patients developed severe ACD.

Only in August 2017 the major culprit allergen IBOA could be identified, followed by further reports and reviews on patients with Freestyle Libre and IBOA allergy (1, 2, 3). Interestingly, in case of the Freestyle Libre, IBOA seems to be part of the sensor itself, while the adhesive and the thin glue layer which sticks the sensor onto the adhesive are free from IBOA (9). IBOA has also been detected in the insulin pump Omnipod from Insulet (Acton, Massachusetts) which is a pump that sticks directly on the skin (4, 5).

ACD to Freestyle Libre occurs typically months, even years after starting use. Therefore, patients who acquire this allergy are already used to their system and do not want to give it up. Switching to another system is often not easy, also in view of cross-elicitation. There is a recent report about the successful use of Cavilon film (Maplewood, Minnesota)) in a patient with Freestyle Libre allergy (6). Yet, this is a single report with just a limited observation period. Moreover, these skin barrier films usually do not protect the skin longer than 72 hours. Thus, most patients try to wear another adhesive or special hydrocolloid plates under their sensor to prevent ACD. In the last few years we provided up to 10 patients with Freestyle Libre allergy with Hansaplast blister plaster, which worked well in these patients. We also successfully used another plaster under the sensor in 2 patients with ACD, namely, Cutimed Hydro B from BSN medical (Hamburg, Germany).

One Hansaplast blister plaster is generally too small, so 2 of them are put together with a little overlap. Patients with insulin pump allergy even need 3 plasters because of the bigger size of the plastic case. Also, we observed that one plaster may not provide a reliable barrier over 14 days.

Limitations of these constructions are the costs and a reduced wearing comfort. Before placing the sensor onto a plate, a little hole has to be punched so that the sensor catheter can reach the skin. However, sometimes the sensor catheter cannot be correctly placed into the skin. Also, at the site of sensor filament placement some erythema and itching may occur as well.

In summary, we found that Hansaplast blister plaster works very well in terms of mostly preventing ACD symptoms, notwithstanding some smaller limitations over a longer period under the Freestyle Libre. This work-around can also be used in cases with ACD to any other diabetes devices such as other glucose monitoring systems, patch pump Omnipod or conventional insulin pump adhesives. However, our construction is only regarded as temporary work-around, until an IBOA-free variant of Freestyle Libre is available, reducing the risk of developing ACD.

Legend of the figure

Figure 1a: Freestyle Libre

Figure 1b: Strong allergic contact dermatitis to Freestyle Libre after 3 days wearing time

Figure 1c: 2 Hansaplast overlapped under Freestyle Libre

Figure 1d: No ACD after 14 days wearing time, in the middle small redness at the site of the sensor catheter

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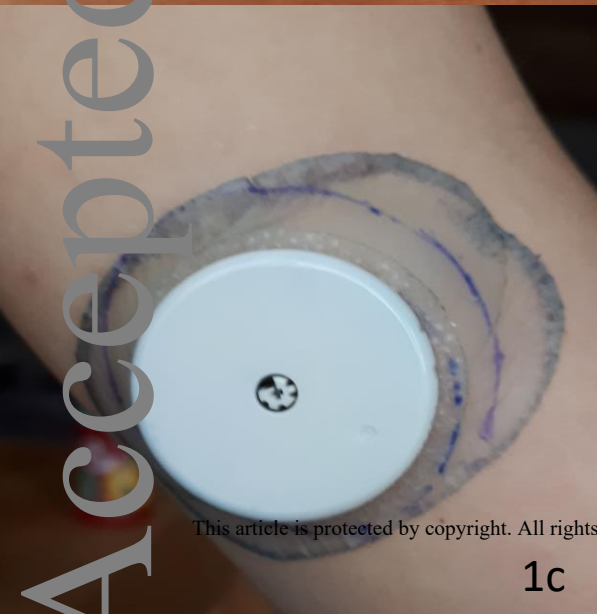
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1a



1b



1c



1d