

LETTER TO THE EDITOR/LIST DO REDAKCJI

Allergic contact dermatitis caused by diabetes medical devices

Alergiczne kontaktowe zapalenie skóry wywołane przez urządzenia dla diabetyków

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Introduction of glucose sensors and, in particular, insulin infusion systems was a breakthrough in treatment of diabetes mellitus type 1 (DM1). Not only did they enhance the management of DM1 but also improved patients' quality of life [1]. However, as new medical devices appear on the market, adverse cutaneous reactions to them have recently been reported, including allergic contact dermatitis (ACD) [2]. Studies showed that almost 90% of diabetic children and adolescents using diabetic devices related to devices [3], whereas itch and eczema lesions are present in more than 70% of patients using sensors [4]. Skin lesions are usually localized at contact sites. The clinical picture comprises of dryness, scalding, erythema, oedema, punctiform erosions or sometimes vesicles (Figures 1, 2).

Bearing in mind a lifelong course of DM1 and, therefore, long-term usage of insulin pumps and glucose sensors, the problem of contact dermatitis becomes urgent and needs to be addressed. The risk of sensitization and, secondly, development of ACD during a patient's life is significant. Some of the problems reported by patients include recurrent itching and burning sensations after application of a device, necessity to change the application sites more frequently, problems with quality of sleep

or low self-esteem due to visible skin lesions (Figure 1). Sometimes, the severity of contact dermatitis force patients to measure glucose levels by finger pricking or to administer insulin via injections. Such actions increase the risk of more common hypoglycemic/hyperglycemic incidents and, therefore, may contribute to serious complications resulting from uncontrolled glycaemia levels.

Different acrylates, colophonium and epoxy resin were already proven to cause ACD in users of diabetes medical devices [5]. Acrylates are a wide group of chemical agents found in glues used to attach glucose sensors and infusion kits to the skin. Their presence in many adhesives has been confirmed by gas chromatography-mass spectrometry. Currently, an increasing number of cases of acrylate-induced ACD in DM1 patients puts these allergens in the spotlight with isobornyl acrylate (IBOA) as the most often reported [6–9]. Targeted patch tests performed in patients suffering from contact dermatitis may help in determining the causative allergen. An inevitable limitation of the tests is THE inability to test all possible allergens. Identification of suspected allergens present in devices usually requires analytical methods such as gas chromatography-mass spectrometry. On the other hand, the repetitive attachment of adhesives to the skin may



FIGURE 1. Contact dermatitis elicited by an insulin infusion set



FIGURE 2. Contact dermatitis triggered by a glucose sensor

lead to irritant contact dermatitis (ICD), which remains a diagnosis of exclusion when patch tests are negative [10]. Data regarding the prevalence of ACD and ICD in diabetic patients are very sparse. However, Herman *et al.* showed that in their study 32.7% of patch tested patients did not have any positive results, indicating ICD or contact with an undiagnosed allergen [10].

In conclusion, awareness about ACD triggered by insulin infusion systems and/or continuous glucose monitoring devices needs to be brought to the attention of allergists, dermatologists and diabetologists. Patients presenting with contact dermatitis at the application sites of their diabetic kits should be referred for patch tests to, as far as possible, confirm or exclude the underlying cause to be an allergic reaction.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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