Late reactions to *para*-phenylenediamine are not always an indication of active sensitization: an example

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para-Phenylenediamine (PPD), one of the major components of hair dyes and a necessary intermediate in the manufacturing of several chemicals including azodyes for textiles, has recently been implicated in a discussion concerning its risk of active sensitization by patch testing (1–3). Some authors believe that late reactions to PPD always express active sensitization, which may be an argument for deleting this compound from the standard series (1). Our case demonstrates that not all late reactions to PPD concern active sensitization.

Case Report

A 21-year-old girl presented 1 year ago with a history of itchy, erythematous plaques on her face, right shoulder and antecubital folds. The medical history did not show any personal atopic events, but there was evidence of allergic rhinitis in the family. She frequently wore dark-coloured synthetic clothing. According to this information we kept in mind the possibility of a textile dermatitis. Patch testing showed negative reactions at D2 and D4, but a late reaction at D11 to PPD (++) in the standard series, as well as to disperse orange 3, 1% pet. (Chemothechnique) (++), an azodye. Subsequently, she was told to avoid this type of clothing.

Nevertheless, her eczema persisted and therefore she recently returned to our outpatient clinic for further investigations. She had avoided synthetic clothing and believed certain food to worsen her eczema. She also complained about an unpleasant itchy sensation on the head when wearing a bathing cap, and paraesthesia of the fingers after wearing latex gloves.

Clinical examination now showed eczematous lesions on the breasts (areolae), antecubital folds, and inner parts of the upper arms. Radioallergosorbent tests and prick tests for latex, avocado, tomato, kiwi and banana were negative. She had slightly elevated IgE levels (253 kU/l). Both the localization of the lesions in frictional areas and the raised IgE favoured the diagnosis of atopic dermatitis. To exclude a superimposed undiscovered contact-allergic phenomenon, patch testing was repeated. Again, the same late reaction to PPD at D11 was seen; the readings at D2 and D4 being entirely negative. This time the late reaction to disperse orange 3, 1% pet. (Chemothechnique), was doubtful.

Conclusion

This case illustrates the fact that a late reaction to PPD does not always express primary sensitization by patch testing because the late reaction also obtained the second time here proves this. It is worth mentioning that PPD 1% pet. (more than any other substance in the standard series) can indeed cause active sensitisation; however, according to Aalto-Korte et al. (4), a reduction of its concentration to 0.3% could prevent this.

We believe that PPD, which is the diagnostic tool for one of the more important causes of contact dermatitis (after fragrance mix the number 2 allergen in men in our population since 1995! – data not published), must remain in the standard series. If not, many reactions to PPD, often being relevant to rubber and also plastic materials, such as polyurethanes and isocyanates (via cross-sensitivity to diaminodiphenyl methane), hair and textile dyes, and so on, will go unnoticed. This means that the corresponding contact dermatitis will be misdiagnosed and eventually mistreated.

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