

¹Department of Dermato-venereology, National Allergy Research Centre, Gentofte University Hospital, Gentofte, ²Dermatology Clinic, Bagsværd and ³Research Centre for Prevention and Health, Glostrup University Hospital, Glostrup, Denmark

Para-phenylenediamine (PPD), a constituent of permanent hair dyes, may cause contact allergy in exposed individuals. It has previously been questioned whether a patch testing with PPD in population-based epidemiological studies is entirely safe. The Glostrup allergy studies patch tested the same cohort twice. In 1990, 567 persons were patch-tested and only one person had a (+) positive reaction to PPD. In 1998, 540 persons were re-invited to a new patch test and 365 (participation rate 68%) were re-tested. There were no positive reactions to PPD. These studies indicate that patch testing with PPD in individuals with no previous positive reactions to PPD or with only one previous positive reaction does not cause active sensitization and can be performed with minimal risk.

Key words: epidemiology; para-phenylenediamine; PPD; risk; sensitization.

Para-phenylenediamine (PPD), a constituent of permanent hair dyes, may cause contact allergy in exposed individuals. In the 1930s, Bonnevie suggested that PPD was included in the patch test standard series in Denmark due to accumulating cases of contact dermatitis to synthetic hair dye (1). Recently, it has become a subject of discussion whether routine patch testing with PPD causes active sensitization in patients (2;3). It has also been questioned whether patch testing with PPD in population-based epidemiological studies is entirely safe (4).

In 1990 and again in 1998, the Glostrup allergy studies patch tested the same cohort (5). Based on data from these studies, we attempt to assess if there was a risk of active sensitization to PPD.

Materials/Methods and Results

The 1990 and 1998 studies have previously been described in detail (5, 6). Briefly, a ready-to-apply patch test (TRUE-test; ALK-Abelló, Hørsholm, Denmark) and detailed instructions were mailed to participants. The test was applied at home,

2 days prior to scheduled reading at the clinic. Upon presentation, the patch test was removed and readings were done approximately 1 hr later. In 1990, 567 persons were patch tested and only one person had a (+) positive reaction to PPD. In 1998, 540 persons were reinvited to a new patch test and 365 (participation rate 68%) were retested. There were no positive reactions to PPD.

Discussion

This study shows that patch testing with PPD in a random population was done without observing active sensitization. It should be emphasized that readings were done on day 2 (D2) only and that D3 readings might have shown more positive reactions in 1990 as well as in 1998. Evidently, these population-based data cannot be directly compared with patient data collected from hospitals and clinics. However, approximately 15–25% of individuals in the Glostrup allergy study had a positive history of hand eczema (7). It is therefore likely, that these individuals share some characteristics with a subgroup of patients who are patch tested in clinics. Hence, the data indicate that patch testing with PPD in individuals with no previous positive reactions to PPD or with only one previous positive reaction does not cause active sensitization and can be performed with minimal risk.

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Is there a risk of active sensitization to PPD by patch testing the general population?

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Jacob Pontoppidan Thyssen¹, Torkil Menné¹, Niels Henrik Nielsen² and Allan Linneberg³

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Address:

Jacob Pontoppidan Thyssen, MD
Department of Dermato-venerology
National Allergy Research Centre
Gentofte University Hospital
Ledreborg Allé 40
1. 2820 Gentofte
Denmark
Tel: +45 3977 7307
Fax: +45 3977 7118
e-mail: jacpth01@
gentoftehosp.kbhamt.dk