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The Prevalence and Risk Factors of Contact Allergy in the Adult General Population

Summary

Contact allergy is prevalent in the general population. A review, based on data from 9 patch test studies performed between 1966 and 2007 estimated that the median prevalence of contact allergy was 21.4% (range 15.2–26.3%) among 15-69 year old Scandinavians. The most prevalent contact allergens were nickel, fragrances, and thimerosal. Risk factors of contact allergy included female sex and ear-piercing. A possible effect of tobacco smoking on the prevalence of contact allergy has not been determined with certainty despite one Danish population based study found a significant dose-response relationship between contact allergy and smoking. Contact allergy is associated with hand eczema which may result in decreased quality of life and sick-leave.

This PhD had two aims: Firstly, to estimate the overall prevalence of contact allergy among adults from the general population in Denmark. Secondly, to investigate whether alcohol consumption and tobacco smoking affect the prevalence of (nickel) contact allergy.

Two different approaches were used to estimate the prevalence of contact allergy: A simple mathematical approach, the clinical epidemiology and drug utilization research (CE-DUR) method, used patch test data from dermatitis patients (n=14 284) tested within the Danish Contact Dermatitis Group during 2001-2005 in combination with patch test sales data from 1996-2005 to estimate the 10-year prevalence of contact allergy among adult Danes. The second estimate was based on results from a cross-sectional patch test study performed in adult volunteers from the general population in Copenhagen between 2006 and 2008. Participants (n=3 460) were patch tested with TRUE-tests® and readings were done on day 2. As a cross-sectional patch test study using similar methods was also performed in 1990 (n=543), the development in the prevalence of contact allergy could be assessed. A possible effect of alcohol consumption on the prevalence of (nickel) contact allergy was investigated by using questionnaire data from the 1990 (n=1 056) and 2006 (n=3 460) studies, and by using follow-up data from a similar patch test study performed in 1998 (n=734) where 69% participants from the 1990 were patch tested again. Finally, an association between tobacco smoking and (nickel) contact allergy was investigated by using questionnaire and patch test data from the 2006 study.

The CE-DUR method estimated that the 10-year prevalence of contact allergy ranged between 7.3% and 12.9% among adult Danes (>18 years). Based on German experience, the worst case scenario may reveal the most accurate estimate, i.e. 12.9%. Despite inherent inaccuracies of the CE-DUR method, it may work as a rapid and in-expensive way to monitor the prevalence of contact allergy in the general population. The 1990 and 2006 patch test studies found that the overall prevalence of contact allergy among 18-69 year olds decreased from 15.5% in 1990 to 10.0% in 2006 (p<0.001). This was mainly explained by a decrease in thimerosal-, cobalt-, Myroxylon Pereirae- and rubber allergy. The decrease of thimerosal allergy may be explained by the removal of this ingredient from

vaccines in Denmark. Tobacco smoking was significantly associated with nickel allergy (ptrend<0.05). In contrast, there was no clear association between alcohol consumption and contact allergy (or nickel allergy), although the 8-year incidence of contact allergy tended to be inversely associated with alcohol consumption in women (ptrend =0.045).