

Fragrance Allergy – Diagnosis, Causes and Quality of Life

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Maria Vølund Heisterberg defended her PhD thesis at the National Allergy Research Centre, Department of Dermato-Allergology, University of Copenhagen, Gentofte Hospital, Denmark, on October 11, 2013. The thesis was supervised by Professors Jeanne Duus Johansen and Torkil Menné. The opponents were Associate Professor Charlotte G. Mørtz, Dermato-Venereologica and Allergy Centre, University of Southern Denmark and Professor An Goossens, University Hospital KU Leuven, Belgium.

The PhD thesis focuses on allergy to fragrance ingredients. The overall objective was to determine: (i) if the “new” screening marker for fragrance allergy, the fragrance mix II (FM II), contributes as a screening marker of fragrance allergy, (ii) to determine which exposure sources cause allergic contact dermatitis to fragrance ingredients, and (iii) if and how fragrance allergy affects quality of life (QoL).

The thesis consists of 4 studies. The first two studies are epidemiological studies based on patch test results from patients consecutively investigated for allergy by the Danish Contact Dermatitis Group. The prevalence of FM II allergy was determined in the first study and which exposure sources cause allergic contact dermatitis to fragrance ingredients was investigated in the second study.

The third study is a methodological study where a disease-specific QoL instrument was developed to assess QoL in subjects with fragrance allergy. The fourth study is a matched case-control study which was used in the validation of the above-mentioned QoL instrument and furthermore to assess QoL in subjects with fragrance allergy.

Results show that FM II contributes in the diagnostic screening of fragrance allergy. The prevalence of a positive patch test reaction was 4.5%, and it further identified 202 patients (15.6%), who would otherwise have gone undetected with a fragrance allergy. The most frequent cause of allergic contact dermatitis to fragrance ingredients was cosmetic products, and many different cosmetic product groups were involved. Most frequently listed were deodorants, fine fragrances, lotions and shampoos. An association between certain cosmetic product groups listed as the cause of their allergy and allergy to specific fragrance ingredients/markers was observed.

A new simple disease-specific QoL instrument for fragrance allergic subjects was developed and validated, the Fragrance QoL index. Overall, the validation analyses showed that it was a good applicable instrument for measuring QoL and from this QoL instrument, we have found that fragrance allergic subjects have

impaired QoL. A clear gender difference was found in how fragrance allergy affects QoL, as women had an increased QoL impairment also compared with their controls, which was not found among the men. We also found that young women had increased QoL impairment around the time of diagnosis, and that the number and severity of fragrance allergies among all women were associated with QoL impairment. Most notably, we found that allergy to certain fragrance ingredients/markers was associated with a reduced QoL among women.



This PhD thesis contributes with new knowledge to optimise the diagnosis of fragrance allergy. The FM II is now a part of the standard screening for contact allergy throughout Denmark. The studies show that certain cosmetic products pose a particular risk for the development of allergic contact dermatitis to fragrance ingredients.

In addition, in this PhD thesis a new validated disease-specific QoL instrument is introduced, which can be used to assess QoL among subjects with a fragrance allergy.

These results open up for more specific preventive interventions both at an individual level and at a public health level. At the individual level a more specific guidance in prevention could be established taking the factors that affect their QoL into account. Furthermore, a better diagnosis could lead to better prognosis. At the public health level the preventive interventions could be through legislation on improvement of the labelling of fragrance ingredients on cosmetic products, prohibit high concentrations of certain fragrance ingredients, and perhaps completely prohibit certain highly allergenic fragrance ingredients. These preventive interventions would require an increased joint effort from patients, healthcare professionals, researchers, government and perfume industry.