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Epidemiological and clinical studies on hand eczema in a population-based twin sample

Summary

Hand eczema is a frequent disease with a considerable risk of chronic symptoms, sick leave and job change. Preventive measures require insight into the pathogenesis of hand eczema and risk factors for development. The aims of this thesis were to investigate the relative importance of genetic and environmental risk factors for hand eczema independent of atopic dermatitis; to determine the incidence rate of hand eczema in a population-based adult cohort and assess possible risk factors for hand eczema; to investigate the clinical characteristics, including patch test reactivity, and consequences of hand eczema; and to investigate a possible association between the filaggrin null alleles, R501X and 2282del4, and hand eczema or contact allergy.

The thesis includes results from two separate, but related projects. Both projects are follow-up studies on a twin study on hand eczema from 1996–99. The first study was a population-based questionnaire survey including 4128 twin individuals born between 1953 and 1976 who previously participated in a questionnaire survey in 1996. Secondly, a subgroup of 274 twin individuals with self-reported hand eczema or a co-twin with self-reported hand eczema participated in a clinical examination, patch test and interview. These individuals participated in a similar examination in 1997–98. All individuals were ascertained from the Danish Twin Registry.

The heritability of hand eczema independent of atopic dermatitis was estimated using quantitative genetic modelling. Genetic factors, independent of atopic dermatitis explained 41% of the variance in liability to develop hand eczema. The crude incidence rate of hand eczema was 8.8 cases per 1000 person-years. Monozygotic twin individuals with a co-twin affected by hand eczema had a doubled risk of hand eczema compared to dizygotic twin individuals with a co-twin affected by hand eczema, confirming the importance of genetic risk factors. In addition, reporting a positive patch test, atopic dermatitis and wet work were significant risk factors.

In the clinical survey, sick leave and job change due to hand eczema was reported by 12.4% and 8.5%, respectively. The majority (62.7%) had seen a doctor because of hand eczema at least once. Low socioeconomic status and atopic dermatitis were risk factors for sick leave due to hand eczema. Persistence of hand eczema after 8 years of follow-up was reported by 67.7%, and long duration (>10 years) at the start of follow-up was a risk factor for persistence of hand eczema. The frequency of contact sensitivity in individuals with and without hand eczema was 31.3% and 17.6%, respectively. No association between the filaggrin null alleles and hand eczema or contact allergy was found. The previously reported association with atopic dermatitis was confirmed.

In conclusion, genetic risk factors independent of atopic dermatitis were shown to have a moderate influence on the risk of hand eczema. Characterization of different phenotypes

of hand eczema and a search for possible associated genetic polymorphisms is an interesting, natural next step to exploit this knowledge with regard to prevention, diagnosis and prognosis. A wide spectrum of disease severity, consequences and persistence was found, overall with a tendency to chronic symptoms. Thus the importance of preventive measures is unchanged. No association between the filaggrin null alleles and hand eczema or contact allergy was found. Further association studies in selected hand eczema subgroups are an interesting future research subject.