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Predictors and Risk Factors for Atopic Dermatitis in early Infancy

Summary

The primary aim of the thesis was to describe the development of atopic dermatitis (AD) during the first three years of life by describing the progressively changing skin lesion pattern of AD over time; to study the severity progression of AD over three years' time; and to identify the localization of the early skin lesions that predicts the development of AD by the age of three years.

The secondary aim was to identify prenatal and perinatal risk factors for AD by the age of three years with respect to heredity, social status, preconception variables, prenatal complications, prenatal exposures and birth variables.

The study was based on the COPSAC (Copenhagen Study on Asthma in Childhood) cohort, a prospective longitudinal birth-cohort of children, born of mothers with asthma. The children were followed for three years with scheduled visits every six months as well as acute visits for skin symptoms. The cohort was recruited from Greater Copenhagen and followed at a clinical research unit, which controlled all diagnosis and treatment. 411 infants were included in the cohort; 55 had incomplete follow-up and were excluded from the analysis. AD diagnosis was based on the Hanifin and Rajka criteria, and AD severity assessed by SCORAD. Predictive odds-ratios of early skin lesions for those who developed AD versus those who did not were calculated. Heredity, prenatal and perinatal questionnaire-based factors were obtained by interview of the mother and father. Preliminary univariate Odds ratio estimates from logistic regression of AD development by three years of age were presented for heredity, prenatal and perinatal risk factors.

The cumulative incidence of AD by three years of age was 44 (155/356). The prevalence rate for boys peaked at two and for girls at 2½ years of age, but there was no gender difference in the proportion of children developing AD. Skin involvement in AD-infants was found to begin at the scalp, forehead, ear, and neck like a balaclava, and continue to the extensor sides of the extremities, trunk and finally the flexor sides of the extremities. Most infants presented mild to moderate AD and no obvious gender difference was seen in severity. The severity of AD generally declined with age. Early skin lesions of arms and joints best predicted AD at the age of three years.

The study revealed maternal AD, maternal history of hand eczema and paternal asthma, allergic rhinitis and inhalant-allergy as the strongest genetic risk factors (of the atopy diseases) for developing AD by the age of three years.

Maternal limited exercise during 3rd trimester and alcohol intake in pregnancy as well as short birth length (of otherwise full term children) dominated as significant prenatal and perinatal risk factors for AD development by the age of three years.

The COPSAC cohort is a birth cohort of children at high-risk for developing atopic diseases including AD. This selection restricts how the findings may be generalized, and validation in unselected populations may be needed. This thesis aimed to explore predictors and risk factors for atopic dermatitis in early infancy, which may allow early intervention and hope for prevention strategies in the future.