Smoking and allergy

A prospective cohort study of infants at high risk for allergy development

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ABSTRACT

The objective of this study was to estimate the risk of allergic sensitization in infants in the first 18 months of life in relation to tobacco smoke exposure during pregnancy and infancy. The study aimed to assess the effect of parental atopy and sensitization on development of atopic symptoms and allergic sensitization in the off-spring in early childhood.

A prospective non-intervention population-based cohort study was initiated in October 1997 in Odense, Denmark. The author of the thesis established a cohort of selected newborns where both parents had atopic disease (n=118) and data was analysed together with data from a cohort comprising randomly selected newborns (n=562) from the same geographic area. Tobacco smoking by the parents was registered prospectively by interview and validated by expired carbon-monoxide. Sensitization among the infants was determined by skin prick test and measurements of specific IgE at 6 and 18 months of life.

The validity of the interview-obtained self-reported smoking among parents during pregnancy and early childhood was high. Children exposed to tobacco smoke had an increased risk of respiratory symptoms during the first 18 months of life. Most pronounced risk was seen for wheeze apart from with cold (odds ratio 2.5 (CI 95%: 1.3-4.9)). No association between exposure to tobacco smoke and sensitization during the first 18 months of life was found.

The risk of atopic dermatitis was increased by single (OR 2.06 (CI 95%: 1.07-3.94)) and double atopic disposition (OR: 9.60 (CI 95%: 5.25-17.58)). Risk of rhinitis and recurrent wheezing (OR: 2.00 (CI 95%: 1.22-3.27)) was increased when both parents were atopic. Both maternal and paternal atopy was related to positive skin prick test: OR: 3.0 (CI 95%: 1.4-6.3) (mother) and OR: 3.2 (CI 95%: 1.5-6.9) (father).

Atopy in one or both parents increased the risk of atopic disease and of allergic rhinitis among children up to the age of 18 months. Maternal and paternal atopy was equally associated with allergic sensitization among children.

The present study showed an increased prevalence of respiratory symptoms in early childhood among children of smoking parents. Whether the risk of reduced lung function and increased airway responsiveness in later life is increased among these children is not known. Follow-up of the cohort focusing on development of respiratory symptoms and asthma later in childhood is essential.

The role of atopic heredity in development of atopic diseases among the offspring must be investigated further during childhood. Whether presence of atopic dermatitis in early childhood in combination with other risk factors such as early sensitization or atopic disposition from one or both parents could predict later disease development must be evaluated by follow-up of the cohort.