Parental smoking, wheezing and sensitisation in early childhood

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The aim of this thesis is to explore the possible effects of exposure to cigarette smoking during foetal and early postnatal life on lower respiratory disease and sensitisation in children up to four years of age. A prospective birth cohort of 4,089 newborn infants (BAMSE) was followed during four years using parental questionnaires. When the infant was two months old the parents completed a questionnaire on various lifestyle factors, including maternal smoking during pregnancy and parental smoking after birth. At one, two and four years of age information was obtained by questionnaire on symptoms of allergic and respiratory diseases as well as on environmental exposures, particularly exposure to environmental tobacco smoke (ETS). At four years of age the response rate was 91% (3,619 children) and among these 73% participated in a clinical investigation including peak flow measurements and blood sampling for analyses of IgE antibodies to common inhalant and food allergens. Odds ratios (ORs) and 95% confidence intervals (CIs) were calculated using logistic regression with adjustments for confounders.

Maternal smoking during pregnancy, parental smoking after the baby was born and keeping of cat or dog were all associated with short education. The risk of respiratory illness in children increased with exposure to parental cigarette smoking. When the mother had smoked during pregnancy but not after that, there was an increased risk of recurrent wheezing up to two years´ age, ORadj=2.2 (95% CI 1.3 – 3.6). The corresponding OR was 1.6 (95% CI 1.2 – 2.3) for reported exposure to ETS with or without maternal smoking during pregnancy. Follow up at four years´ age showed that exposure *in utero* to maternal smoking was associated with an increased risk of transient (OR=1.8, 95% CI 1.2 – 2.5), persistent (OR=2.1, 1.5 – 2.8) and late-onset wheezing (OR=1.5, 1.0 – 2.2). There was no strong association between exposure to parental smoking and any kind of wheezing. Neither prenatal nor postnatal exposure to tobacco smoking was associated with impairment of lung function (peak expiratory flow). An increased risk with ETS was found for sensitisation to inhalant and/or food allergens, ORadj=1.3, (95% CI 1.0 – 1.6). Among single allergens the effect of ETS on sensitisation to cat was particularly strong, ORadj=2.00 (95% CI 1.3 – 3.0). A doseresponse effect was found for exposure to ETS from parental smoking during the first few months of life and IgE-sensitisation.

In conclusion, our data indicate that exposure to maternal cigarette smoking *in utero* is a risk factor for wheezing up to four years of age and exposure of infants to ETS increases the risk of IgE-sensitisation to indoor inhalant and food allergens.