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Maternal smoking during pregnancy affects adult onset of asthma in offspring: a follow up from birth to age 46 years

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Maternal smoking during pregnancy is linked to cumulative incidence of asthma in offspring between 31 and 46 years. The association was accentuated in those reporting at age 31 as having past respiratory problems and/or who had haplotype rs11702779-AA. <http://bit.ly/2WgR91H>

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ABSTRACT

Rationale: Environmental tobacco smoke (ETS) exposure increases asthma risk in children. There is limited knowledge of prenatal ETS for adult-onset asthma.

Objectives: To determine the association between prenatal ETS and adult onset asthma.

Measurements and main results: The questionnaire and clinical data of 5200 people, free of physician-diagnosed asthma by 31 years of age, who were included in the Northern Finland Birth Cohort 1966 Study was used. The association of maternal smoking during the last 3 months of pregnancy with onset of physician-diagnosed asthma and with lung function in adult offspring was studied using adjusted multivariate regression analyses. The cumulative incidence of physician-diagnosed asthma between the ages of 31 and 46 years was 5.1% among men and 8.8% among women. Gestational smoke exposure was associated with adult-onset asthma among offspring (adjusted OR 1.54, 95% CI 1.04–2.29), namely among offspring who reported either past non-diagnosed asthma (OR 9.63, 95% CI 2.28–40.67) or past cough with wheeze (3.21, 95% CI 1.71–6.05). A significant association was detected between gestational smoke exposure and the offspring's forced expiratory volume in 1 s (FEV₁)/forced vital capacity (FVC) ratio at 31 years of age. In offspring with the haplotype rs11702779-AA of *RUNX1*, gestational smoke exposure was associated with adult-onset asthma (5.53, 95% CI 2.11–14.52, adjusted p-value for interaction 0.10).

Conclusion: Maternal smoking during pregnancy is associated with the cumulative incidence of asthma in offspring between the ages of 31 and 46 years. The association was accentuated in offspring who at age 31, reported having past respiratory problems and/or who had haplotype rs11702779-AA. A reduction in FEV₁/FVC ratio was also observed at age 31 years in offspring with gestational smoke exposure. These results could reflect the early vulnerability of offspring's airways to ETS and its putative long-term effects.