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Lung alert

Risk of asthma, passive smoking and genetics

There is a known association between genetic variants on chromosome 17q21 and the development of asthma. This study investigated whether specific single nucleotide polymorphisms (SNPs) on 17q21 were linked to specific phenotypes of early-onset asthma and early-onset smoking-exposed asthma.

Individuals with asthma and their first-degree relatives were selected from seven French clinical centres. The phenotype of their asthma was determined by questionnaire. 1511 subjects took part from 372 families and 36 SNPs were genotyped. An association between an SNP and asthma was assessed using the Linkage and Association Modelling in Pedigrees program which uses a likelihood ratio test. SNPs were then further tested for an association with the specific phenotypes.

Eleven SNPs were significantly associated with asthma, three of which were found to be highly significantly associated with early-onset asthma (ie, onset <4 years of age). No associations could be shown with late-onset asthma. Six SNPs had a highly significant association with tobacco exposure and early-onset asthma (the most strongly associated SNP when carried homozygously carried an increase in risk by a factor of 2.9).

Although this study relied on participant recall of exposure to tobacco smoke and age of onset of asthma, the authors identified several specific genetic variables that predispose an individual to developing a specific phenotype of asthma. This adds weight to the argument that asthma actually encompasses several different pathological processes corresponding to different clinical pictures. This has implications in disease progression and management of patients.

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T J Whitfield

Correspondence to: Dr T J Whitfield, CMT1, St James University Hospital, Leeds, UK; tomwhitfield@doctors.org.uk