Abstract

OBJECTIVE--To establish the prevalence of Fc epsilon RI-beta polymorphisms Leu181 and Leu181/Leu183 on chromosome 11q13 in the general population and to examine whether when maternally inherited they confer a risk of atopy.

DESIGN--A population based survey for measures of atopy (skin prick test reactions, specific IgE titres, total serum IgE concentration), bronchial hyperresponsiveness, and carriage of Fc epsilon RI-beta Leu181 and Leu181/Leu183.

SETTING--The rural coastal town of Busselton, Western Australia.

SUBJECTS--1004 members of 230 two generation families identified through adults aged under 55.

RESULTS--Fc epsilon RI-beta Leu181/Leu183 was identified in 45 subjects (4.5%). All 13 children who had inherited the variant maternally were atopic. Six had asthma and nine rhinitis. The odds ratio of a positive skin prick test reaction to house dust mite or grass pollen in these children compared with the other 523 children was 7.37 (95% confidence interval 1.62 to 33.60). The 95% confidence interval for the odds ratio of a positive specific IgE response (radio-allergosorbent test) was 3.00 to infinity, and the odds ratio for bronchial hyperresponsiveness was 3.70 (1.21 to 11.60). By contrast, the eight children who had derived the variant paternally had negative skin prick and radioallergosorbent test results and did not have increased bronchial responsiveness.

CONCLUSION--Fc epsilon RI-beta Leu181/Leu183 when inherited maternally identifies a genetic risk factor for atopy and bronchial hyperresponsiveness.