

Incidence of bronchial hyper-reactivity in an adult cohort from Switzerland (SAPALDIA)

Curjuric I, Schindler C, Gerbase M W, Bettschart R, Brutsche M, Brändli O, Probst-Hensch N M, Nicod L, Zellweger JP, Ackermann-Liebrich U, Zemp E, Rochat T

Background

Longitudinal data on incidence of bronchial hyper-reactivity (BHR) and its predictors are scarce.

Aims and objectives

To study incidence and predictors of BHR in the Swiss Cohort Study on Air Pollution and Lung Diseases in Adults (SAPALDIA).

Methods

Randomly selected adults from eight areas of Switzerland underwent detailed health interviews, atopy testing (by skin prick tests), spirometry and a methacholine bronchial challenge test up to a cumulative dose of 2mg in 1991 and 2002. BHR was defined as a 20% drop in FEV1 from pre-test value. Following characteristics at the baseline examination were assessed as predictors of BHR at follow-up in a multiple logistic model adjusting for area and fieldworker: gender, age, BMI, FEV1, smoking, environmental tobacco smoke exposure, atopy, education, occupational exposure to dust or fumes, family history of asthma or atopy and pulmonary infections in early childhood.

Results

From the 2852 non-reactive participants in 1991, 190 had developed BHR in 2002 (6.7% incidence). BHR was persistent in 216 (46.4%) of 466 hyper-reactive persons at baseline. Among non-reactive subjects at baseline, high values of FEV1 lowered the odds of BHR at follow-up (OR 0.94 per 100ml, $p < 0.001$). Being a smoker or being atopic at baseline was positively associated with BHR at follow-up (OR 1.59, $p = 0.016$ and OR 1.78, $p = 0.001$ respectively). The effect of pulmonary infections in infancy was borderline significant (OR 1.61, $p = 0.052$). No significant associations were found for the remaining characteristics.

Conclusions

Incidence of BHR is considerable among adults. Smoking and atopy at baseline are prospective risk factors for BHR, whereas high values of FEV1 are protective.