Title: Association of air pollution and types of rhinitis defined by a clustering analysis

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Text (maximum 300 words)

Background and aims:
The increase of rhinitis’ prevalence in the last decades could partly be explained by the evolution of air pollution, but this association was scarcely studied in adults. The objective is to assess the association between modeled PM10 and NO2 concentrations and different types of rhinitis in the French longitudinal Epidemiological Study on the Genetics and Environment of Asthma (EGEA), a case-control and familial study.

Methods: Analyses were performed on 983 adults of the first follow-up of EGEA, 582 participants without asthma (As-) and 401 with asthma (As+). Annual average of PM and NO2 were assigned at home addresses using land-use regression models (ESCAPE FP7 PROGRAM).

Cluster analysis enabled to find 3 clusters of rhinitis, the same for both As+ and As-: cluster1 (no rhinitis), cluster2 (assimilated to non-allergic rhinitis: NAR) and cluster3 (assimilated to allergic rhinitis: AR).

The association between each pollutant and rhinitis, AR and NAR separately, was analyzed by logistic regression, adjusting for age, sex and smoking and taking into account family dependence. Odds Ratios (ORs) are reported for an increase of 10 μg.m−3 of PM10 and NO2.

Results: For As-: median concentrations (μg.m−3) were 26.3 (Q1-Q3 19.4-35.8) for NO2 (n=409) and 24.7 (23.2-27.1) for PM10 (n=264).
The ORs for NO2 were: 1.01 (95%CI 0.80–1.25) for NAR and 1.03 (0.80-1.32) for AR.
The ORs for PM10 were: 1.02 (0.41-2.52) for NAR and 1.02 (0.40-2.65) for AR.

For As+: median concentrations (μg.m−3) were 26.2 (Q1-Q3 18.3-35.3) for NO2 (n=287) and 24.5 (22.3-27.5) for PM10 (n=218).
The ORs for NO2 were: 0.87 (95%CI 0.71-1.06) for NAR and 0.90 (0.75-1.08) for AR.
The ORs for PM10 were: 1.36 (0.88-2.7) for NAR and 0.90 (0.38-2.12) for AR.

Conclusions: These preliminary results suggest that there is no association between AR and air pollution, neither between NAR and air pollution.

Keywords: Rhinitis, air pollution, clustering,
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