European Respiratory Society
Annual Congress 2012

Abstract Number: 1907

Publication Number: 4716

Abstract Group: 5.2. Monitoring Airway Disease

Keyword 1: Air pollution **Keyword 2:** Asthma - mechanism **Keyword 3:** Inflammation

Title: Baseline airway inflammation may be a determinant of ozone response in asthmatic patients

Dr. Maria Laura 14587 Bartoli m.bartoli@ao-pisa.toscana.it [1], Dr. Barbara 14588 Vagaggini b.vagaggini@ao-pisa.toscana.it MD [1], Dr. Laura 14589 Malagrinò lauramalagrinò@yahoo.it MD [1], Dr. Elena 14590 Bacci elena.bacci@gmail.com MD [1], Dr. Silvana 14591 Cianchetti s.cianchetti@dctv.unipi.it [1], Dr. Federico 14592 Dente f.dente@ao-pisa.toscana.it MD [1], Dr. Francesco 14593 Costa francesco_costa@hotmail.com MD [1] and Prof. Pierluigi 14599 Paggiaro lpaggiaro@dcap.med.unipi.it MD [1].
[1] Cardiothoracic and Vascular Department, University of Pisa, Italy, 56124 .

Body: Background: It is well known that ozone (O3) exposure induces lung function decrease and airways neutrophilia, but a great variability in airways response has been observed among patients with asthma. Aim: To find predictors of functional and biological airway response to O3 exposure in mild to moderate asthmatic patients. Methods: We studied 120 patients with mild-to-moderate asthma (FEV1% 89.4±14.3), randomly exposed to air or O3 (0.3 ppm for 2 hrs) in a challenge chamber. Symptoms and Pulmonary Function Test were measured before and immediately after exposure. Six hours after exposure, induced sputum was collected. Patients were evaluated according to their functional (ΔFEV1air-O3) and neutrophilic (Δneutro%air-O3) response to O3. Age, baseline FEV1%pred, inhaled corticosteroids (ICS) therapy, baseline sputum neutrophils/ml and eosinophils/ml counts, methacholine responsiveness, atopy and smoking habit were considered as possible predictors of functional and neutrophilic response. Results: FEV1 responders had a lower percentage of ICS-treated patients and lower baseline FEV1 values in comparison with non-responders. Neutrophil responders were younger, more responsive to methacholine challenge and had lower baseline sputum inflammatory cell counts in comparison with non-responders. Conclusions: Patients without ICS therapy and lower FEV1 are more susceptible to functional response to O3. Bronchial hyperresponsiveness and baseline sputum inflammation may predict a neutrophilic airway response to O3; high sputum neutrophil percentages are protective against a further neutrophilic response to O3. Therefore, determinants of functional and inflammatory responses to O3 are different.