Effects of air pollution on exhaled nitric oxide in children: results from the GINIplus and LISAplus studies.

Most previous studies which have investigated the short-term effects of air pollution on airway inflammation, assessed by an increase of exhaled nitric oxide (eNO), have been conducted among asthmatic children. Few studies have considered this potential association among non-asthmatics. Furthermore, although both short- and long-term effects of air pollution on eNO had been reported separately, studies which include both are scarce. We explored associations between 24h NO2 and PM10 (particles with aerodynamic diameters below 10?m) mass with eNO in 1985 children (192 asthmatics and 1793 non-asthmatics) aged 10 years and accounted for the...
long-term effects of air pollution by adjusting for annual averages of NO2, PM10 mass, PM2.5 mass (particles with aerodynamic diameters below 2.5\(^{\text{m}}\)) and PM2.5 absorbance, using data from two German birth cohorts in Munich and Wesel. In total, robust associations between 24h NO2 and eNO were observed in both single-pollutant (percentage change: 18.30%, 95% confidence interval:11.63-25.37) and two-pollutant models (14.62%, 6.71-23.11). The association between 24h PM10 mass and eNO was only significant in the single-pollutant model (9.59%, 4.80-14.61). The same significant associations were also observed in non-asthmatic children, while they did not reach significant levels in asthmatic children. Associations between annual averages of ambient air pollution (NO2, PM10 mass, PM2.5 mass and PM2.5 absorbance) and eNO were consistently null. In conclusion, significantly positive associations were observed between short-term ambient air pollution and eNO. No long-term effects of air pollution on eNO were found in this study.