New insights into the Effects of Traffic-related Air Pollution on Health

In a recent study, researchers have observed a significant association between exposure to traffic-related air pollution and the incidence of otitis media in children. The findings may have significant implications for public health.

Otitis media is one of the most common infections in young children, and it is also one of the main reasons children are taken to the doctor’s. It consists in the inflammation of the middle ear, occurring as a result of infection and often causing pain and temporary hearing loss. In industrialised countries, it is the main reason children are given antibiotics and undergo surgery. Consequently, the identification of preventable risk factors for otitis media would have significant implications for health care costs. Air pollution is not typically seen as a risk factor and therefore, otitis media is not usually taken into account in air pollution health impact and cost-benefit assessments. Several studies have assessed the impact of exposure to air pollution on human health, particularly on respiratory health, but little information is available regarding the potential association between air pollution and otitis media.

A recent study by European and American researchers assessed the relationship between exposure to traffic-related air pollution and otitis media in young children. To this end, the researchers estimated the outdoor concentrations of traffic-related air pollutants - nitrogen dioxide, fine particles (PM$_{2.5}$), and elemental carbon - at the home addresses of approximately 3,700 and 650 infants in the Netherlands and Germany respectively. Air pollution exposure was analysed in relation to a doctor's diagnosis of otitis media in the first two years of life.

The results suggest a positive association between traffic-related air pollutants and the occurrence of otitis media. Indeed, the results indicated an elevated risk of otitis media in association with all the air pollutants studied, with associations reaching statistical significance in the larger Dutch studies.

The researchers observed that by two years of age, approximately 35% of the studied populations in both countries had at least one occurrence of otitis media.

The current study identifies associations between individual estimates of traffic-related air pollution exposure and the incident of otitis. Given the wide-spread nature of air pollution exposure and the high prevalence of otitis media, these results may have significant public health implications as they highlight an important and previously unrecognised social and health impact of air pollution. Considering the high direct and indirect costs associated with this illness, the results of this study highlight a potentially important preventable risk factor for this common childhood disease.

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