

Effects of Air Pollutants on Acute Stroke Mortality

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Abstract

The relationship between stroke and air pollution has not been adequately studied. We conducted a time-series study to examine the evidence of an association between air pollutants and stroke over 4 years (January 1995-December 1998) in Seoul, Korea. We used a generalized additive model to regress daily stroke death counts for each pollutant, controlling for seasonal and long-term trends and meteorologic influences, such as temperature, relative humidity, and barometric pressure. We observed an estimated increase of 1.5% [95% confidence interval (CI), 1.3-1.8%] and 2.9% (95% CI, 0.3-5.5%) in stroke mortality for each interquartile range increase in particulate matter < 10 μm aerodynamic diameter (PM₁₀) and ozone concentrations in the same day. Stroke mortality also increased 3.1% (95% CI, 1.1-5.1%) for nitrogen dioxide, 2.9% (95% CI, 0.8-5.0%) for sulfur dioxide, and 4.1% (95% CI, 1.1-7.2%) for carbon monoxide in a 2-day lag for each interquartile range increase in single-pollutant models. When we examined the associations among PM₁₀ levels stratified by the level of gaseous pollutants and vice versa, we found that these pollutants are interactive with respect to their effects on the risk of stroke mortality. We also observed that the effects of PM₁₀ on stroke mortality differ significantly in subgroups by age and sex. We conclude that PM₁₀ and gaseous pollutants are significant risk factors for acute stroke death and that the elderly and women are more susceptible to the effect of particulate pollutants. Key words: air pollution, mortality, stroke. Environ Health Perspect 110:187-191 (2002).

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