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TO THE EDITOR

The association of airborne pollutant exposure with cerebrovascular pathology is underrecognized. Air pollutants such as particulate matter have the potential to extend beyond pulmonary organs to the central nervous system.[1] People living in highly polluted environments are at risk of developing neurodegenerative diseases, neurocognitive decline, and stroke.[1] Stroke is one of the most common debilitating neurologic deficits. Each year, approximately 5 million people die from stroke, and it is a major cause of disability worldwide.[2]

Road traffic is one of the major contributors to outdoor air pollution and a major source of particulate matter, carbon monoxide, and nitrogen oxides.[3-5] The level of nitrogen dioxide (NO_2) in the air is closely related to traffic-generated particles from car exhausts.[3] Anderson et al showed a significant association between NO_2 and stroke incidence: a 12% increase in the incidence of stroke and a 33% increase in the incidence of fatal stroke.[3] They concluded that reducing the level of NO_2 might reduce the burden of stroke.[3] A study conducted in England and Wales showed that men living in proximity to a major roadway had a 7% higher stroke mortality compared to those living far away.[4]

Air pollution is more strongly associated with ischemic stroke than hemorrhagic stroke. Exposure to particulate matter is associated with a 21% increase in hospital admissions for mild ischemic stroke[5] and a 12% increase in hemorrhagic stroke admissions.[6]

Literature on cardiovascular disease has linked air pollution through systemic inflammation and endothelial damage to acceleration of atherosclerosis and thrombus formation.[7] Loane et al highlighted that particulate matter and ultrafine particulate matter play a role similar to tobacco smoke in accelerating coronary arthrosclerosis that may lead to development of thrombotic stroke.[1] The magnitude of personal risk due to air pollution is lower compared to other well-established risk factors; however, substantial population risk exists as almost everyone is exposed.[5]

The potential role of air pollution in the incidence of stroke and its adverse impact on health cannot be ignored. The stroke mortality rate continues to rise each year; moreover, millions of stroke survivors have serious, long-lasting disabilities. Air pollution is an important and modifiable risk factor for stroke, so public and environmental health policies aimed at curbing air pollution need to be implemented.

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