Wegener’s Granulomatosis

Possible role of environmental triggers

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In a series of clinical trials, researchers are attempting to identify the potential environmental triggers that contribute to the development of Wegener's granulomatosis.

Vasculitis Triggers

Environmental agents have long been suspected of contributing to the development and disease course of the autoimmune vascular disease Wegener's granulomatosis. Wegener's granulomatosis is a chronic autoimmune condition that causes inflammation of blood vessels, resulting in a condition of vasculitis. Vasculitis blocks blood flow to the organs affected by these vessels and eventually leads to destruction of affected tissues.

Wegener’s Granulomatosis

Wegener's granulomatosis primarily involves the respiratory organs and the kidneys. According to researchers, the sporadic occurrence, lack of familial or genetic associations, and rising incidence of Wegener's granulomatosis suggest possible exposure to environmental agents as causing or contributing to this disease. Researchers from the University of Pennsylvania in Philadelphia have identified a cluster of cases in the Dublin, Pennsylvania region that they are studying in an effort to pinpoint these environmental causes.

The Study

By studying hospital records and patient contacts, researchers have located 7 cases that have occurred within a 10-mile radius of an Environmental Protection Agency (EPA) Superfund toxic waste site during a three-year period.

The area under investigation includes approximately 50,000 individuals. Studies of this area have identified several toxins at or above the "action level" including trichloroethylene (TCE), vinyl chloride, methyl tertiary-butyl ether (MTBE), dichloroethane (DCE), and chromic acid from several industrial waste sites within the area.

Interviews with the patients with Wegener's granulomatosis identified in the study showed that these patients reported a total of greater than 30 possible chemicals exposures, including exposures to the chemicals mentioned above. Three of 5 patients had well water exposing them to industrial runoff that required EPA intervention. Additional phone interviews of individuals living in this region showed that mercury and possibly lead exposure were positively associated with Wegener's granulomatosis.
compared to the control group. A prior history of allergy was also associated with disease development.

**Study Conclusion**

The researchers conclude that heavy metal exposure and a prior history of allergy may contribute to Wegener's granulomatosis. Other suspected environmental triggers currently under investigation include aromatic hydrocarbons, silica, farming, prior respiratory infections especially those with Staphylococcus aureus, drug allergy or reaction, and occupational solvent exposures.

**Other Investigations**

In a related study, Ohio researchers postulated that an inhaled agent may be responsible for Wegener's granulomatosis because of its inclination to affect the nasal passages and other respiratory organs. By investigating environmental exposures experienced by patients within the year prior to their diagnosis and comparing them to other people in the region unaffected by Wegener's, the researchers found that there was no seasonal trend to suggest environmental allergens as a cause. However, the patients with Wegener's granulomatosis reported a higher incidence of exposure to particulate materials from construction and occupational exposure to pesticides.

In November 2006 Swedish researchers reported an increased incidence of Wegener's granulomatosis. Whether this increase is related to improved diagnostic tests, particularly the introduction of tests to measure antineutrophilic cytoplasmic antibodies (ANCA) or an increased incidence of disease remains uncertain. In the meantime researchers at the University of Pennsylvania continue to pursue their efforts to confirm the environmental triggers of Wegener's granulomatosis.

**Resources:**


