

## Air Pollution Linked to Arrhythmias



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Life-threatening arrhythmias are more common on days with highly polluted air, according to research presented at Heart Failure 2022, a scientific congress of the European Society of Cardiology (ESC).

According to the World Health Organization (WHO), air pollution kills nearly 4.2 million people every year. One in five cardiovascular disease deaths is due to dirty air. It is ranked as the fourth-highest risk factor for mortality after high blood pressure, smoking and poor diet.

The study included 146 patients who received an ICD between January 2013 and December 2017. Over half of the patients had never experienced a ventricular arrhythmia, and 67 patients had previously had a ventricular arrhythmia. Daily levels of PM10, PM2.5, carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>) and ozone (O<sub>3</sub>) were obtained from Regional Environmental Protection Agency (ARPA) monitoring stations. Patients were assigned exposures based on their home addresses. The researchers analysed the association between pollutant concentrations and ventricular arrhythmias.

A total of 440 ventricular arrhythmias were recorded during the study period, of which 322 were treated with anti-tachycardia pacing, and 118 were treated with a shock. The researchers found a significant association between PM2.5 levels and ventricular arrhythmias treated with shocks, corresponding to a 1.5% increased risk for each 1 µg/m<sup>3</sup> rise in PM2.5. They also found that when PM2.5 concentrations were elevated by 1 µg/m<sup>3</sup> for an entire week, compared to average levels, there was a 2.4% higher likelihood of ventricular arrhythmias regardless of the temperature. When PM10 was 1 µg/m<sup>3</sup> above average for a week, there was a 2.1% raised risk of arrhythmias.

Study author Dr Alessia Zanni of Maggiore Hospital, Bologna, Italy, says, “When particular matter (PM) 2.5 and PM 10 concentrations are high (above 35 µg/m<sup>3</sup> and 50 µg/m<sup>3</sup>, respectively), it would be sensible to stay indoors as much as possible and wear an N95 mask outside, particularly in areas of heavy traffic. An air purifier can be used at home.”

Dr. Zanni concluded: “These data confirm that environmental pollution is not only a climate emergency but also a public health problem. The study suggests that the survival of patients with heart disease is affected not only by pharmacological therapies and advances in cardiology but also by the air that they breathe.”

Source: ESC  
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