

大気汚染は血管形成術の施行率を上昇させる (Abstract 2072)

大気汚染と冬は心筋梗塞治療率上昇と関連がある

Air pollution and winter linked with rise in treatment for myocardial infarction

寒い月の重度の大気汚染地域は空気の汚染されていない地域に比べ血管形成術施行率が高い、とESC Congress 2019 together with the World Congress of Cardiology で発表された。研究者らは、PM10 を用いて汚染されていない6都市および汚染された5都市を選択した。その結果、汚染地域および非汚染地域いずれにおいても、PM10 濃度の上昇は経皮的冠動脈インターベンション(PCI)の高い施行率と関連があった。空気のきれいな地域の患者は、汚染の悪化により敏感であった。PCI 施行は、1年で最も大気が汚染される冬に多くみられた。

Full Text

Heavily polluted areas have a higher rate of angioplasty procedures than areas with clean air, according to research presented at ESC Congress 2019 together with the World Congress of Cardiology. Procedures are even more common in winter, the most polluted time of year.

Study author Dr. Rafal Januszek of the University Hospital in Krakow, Poland said: "Epidemiological studies have reported negative impacts of pollution on the cardiovascular system but the effects on specific diseases were unclear. We also show for the first time that patients from areas with cleaner air are more sensitive to changes in pollution, while those from more polluted cities can adapt to fluctuations."

Using particulate matter (PM) 10 levels published by the Chief Inspectorate for Environmental Protection in Poland, six unpolluted cities and five polluted cities were selected for the study. PM10 are particles ten micrometres or less in diameter. Sources include industrial processes like iron making and quarrying, lawn mowing, wood and coal stoves, bushfires, dust storms, and vehicle exhaust emissions.

The study enrolled 5,648 patients from unpolluted cities and 10,239 patients from polluted cities. All patients underwent percutaneous coronary intervention (PCI) to open arteries blocked due to acute coronary syndromes. PCI data were obtained from the ORPKI Polish National PCI Registry.

Dates of PCI procedures were matched with air quality on the same day during a 52-week period. Analyses were also performed to compare winter versus non-winter weeks because pollution levels rise during winter.

The annual average PM10 concentration was significantly higher in polluted cities (50.95 µg/m3) compared to unpolluted cities (26.62 µg/m3). In both polluted and unpolluted areas, a rise in PM10 concentration was significantly associated with a greater frequency of PCI.

Patients in cities with clean air were more sensitive to pollution rises, with each 1 µg/m3 increase in PM10 concentration linked to 0.22 additional PCIs per week. While in polluted cities, the same rise in PM10 was linked with just 0.18 additional PCIs per week.

Regarding the seasonal effect, the PCI rate was significantly lower in non-winter, compared to winter, weeks in both polluted and clean cities. "The higher incidence of PCI in winter is related to greater air pollution during this period," said Dr. Januszek. "This is due to several factors such as artificial heating and the resulting smog."

He concluded: "The study shows that the incidence of acute coronary syndromes treated with PCI was higher in winter and rose along with increasing pollution, and this rise was higher in regions with initially cleaner air, if taking the same increment in pollution into account. This is further evidence that more needs to be done to lower pollution levels and protect the public's health."

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