

The Short-term and Long-term Effects of Ambient Air Pollution on Mitigation effects of Surgeries for Allergic Rhinitis Patients

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Abstract

Previous studies demonstrated that air pollution increased the risk of allergic rhinitis occurs. Surgery treatments could have better effects than medication only on allergic rhinitis in clinical practice. The mitigation effects of surgeries were documented, mainly for short-term. However, the association of ambient air pollution with the mitigation effects of surgeries was still unknown not only for short-term but also for long-term effects. The objective of this study is to investigate the both short-term and long-term effects of ambient air pollution on mitigation effects of surgeries for allergic rhinitis patients. The study design was a retrospective cohort study. The medical records of subjects including medical visits and the surgery treatments for allergic rhinitis were collected by Longitudinal Health Insurance Database 2000 (LHID 2000). Air pollution data including SO₂, CO, O₃, NO₂, PM₁₀ and PM_{2.5} were collected by high-density Taiwan Environmental Protection Administration monitoring stations and used in estimating exposure by Geographic Information Systems (GIS). Poisson regression models were used to estimate the relationship between air pollution and medical visits for allergic rhinitis after surgery treatments among allergic rhinitis patients. The result showed that ambient air pollution increased the medical visits for allergic rhinitis patients including medication only and surgery treatments for short-term and long-term follow-ups. In conclusion, our study suggests that air pollution remains a potential risk factor of allergic rhinitis even though patients have executed the surgeries for allergic rhinitis. The protections to avoid ambient air pollution are necessary.

Keywords: Ambient air pollution; Surgeries; Allergic rhinitis; Longitudinal Health Insurance Database 2000 (LHID 2000)