

Prenatal and postnatal exposure to ambient air pollution and asthma in neonatal jaundice infants

Hao-Wei Chung¹, Chih-Hsing Hung², Fu-Chen Kuo³, Hui-Min Hsieh⁴, Chung-Hsiang Li⁵, Yi-Ching Lin⁵, Yu-Hsiang Tsao⁴, and Huang-Wei Wu¹

¹Kaohsiung Municipal Hsiao-kang Hospital

²Kaohsiung Medical University College of Medicine

³E-Da Hospital

⁴Kaohsiung Medical University

⁵Kaohsiung Medical University Chung Ho Memorial Hospital

January 3, 2022

Abstract

Background: Both air pollutants and neonatal jaundice (NJ) have known effects on childhood asthma, but higher total serum bilirubin (TSB) level was associated with lung protection. This study aimed to assess whether prenatal/postnatal exposure to air ambient pollutants is related to the inception of asthma in NJ infants. Material and methods: A nested case-control retrospective study of NJ infants was performed on the Kaohsiung Medical University Hospital Research Database between 2009 and 2019. The average concentration of particulate matter (PM_{2.5}), sulfur dioxide (SO₂), nitric dioxide (NO₂) for six months, first and second years after the birth, and first, second and third trimesters prenatally were analyzed. The mild and significant NJ infants were categorized as TSB level < and [?]12 mg/dl, respectively. Asthma was defined as a diagnosis with medication. The adjusted odds ratio (aOR) and 95% confidence interval (CI) present the relationship between study periods and childhood asthma. Results: SO₂ and NO₂ exposure during prenatal periods were significantly associated with increased risk of childhood asthma in mild NJ infants (aOR (95% CI)), SO₂: 1.20-1.34 (1.05-1.56); NO₂: 1.06-1.07 (1.01-1.13)). Effects were more pronounced in postnatal exposure to three ambient air pollutants in mild jaundice infants. (aOR (95% CI), SO₂: 1.33-1.41 (1.14-1.69); NO₂: 1.07-1.31 (1.01-1.49); PM_{2.5}:1.05 (1.00-1.10) Conclusion: Both SO₂ and NO₂ during prenatal and postnatal exposure in mild NJ infants were associated with childhood asthma. Whether taken phototherapy or not, significant NJ infants were spared by three ambient air pollutants.

Hosted file

prenatl and postnatl amibient air in jaundice infants main feature 1225final.doc available at <https://authorea.com/users/453609/articles/551409-prenatal-and-postnatal-exposure-to-ambient-air-pollution-and-asthma-in-neonatal-jaundice-infants>

Hosted file

figrue 1.docx available at <https://authorea.com/users/453609/articles/551409-prenatal-and-postnatal-exposure-to-ambient-air-pollution-and-asthma-in-neonatal-jaundice-infants>

