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Maternal medically diagnosed infection and antibiotic prescription during pregnancy and risk of childhood cancer: A population-based cohort study in Taiwan, 2004 to 2015

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Abstract

While associations between maternal infections during pregnancy and childhood leukemia in offspring have been extensively studied, the evidence for other types of childhood cancers is limited. Additionally, antibiotic exposure during pregnancy could potentially increase the risk of childhood cancers. Our study investigates associations between maternal infections and antibiotic prescriptions during pregnancy and the risk of childhood cancer in Taiwan. We conducted a population-based cohort study using the Taiwan Maternal and Child Health Database (TMCHD), linked with national health and cancer registries. The study included 2 267 186 mother-child pairs, and the median followup time was 7.96 years. Cox proportional hazard models were utilized to estimate effects. Maternal infections during pregnancy were associated with a moderate increase in the risk of childhood hepatoblastoma (adjusted hazard ratio [HR] = 1.34; 95% confidence interval [CI]: 0.90-1.98) and a weaker increase in the risk of childhood acute lymphoblastic leukemia (ALL) (adjusted HR = 1.15; 95% CI: 0.99-1.35). Antibiotic prescriptions during pregnancy were also associated with an elevated risk of childhood ALL (adjusted HR = 1.30; 95% CI: 1.04-1.63), particularly with tetracyclines (adjusted HR = 2.15; 95% CI: 1.34-3.45). Several specific antibiotics were also associated with an increased risk of hepatoblastoma and medulloblastoma. Children exposed in utero to antibiotic prescription or both infections and antibiotics during pregnancy were at higher risk of developing ALL. Our findings suggest that there are associations between maternal infections, antibiotic use during pregnancy and the risk of several childhood cancers in addition to ALL and highlight the importance of further research in this area.

Keywords: antibiotic; childhood cancer; cohort study; infection; pregnancy.

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