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Birth characteristics and the risk of childhood brain tumors: A case-control study in Ontario, Canada

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Abstract

Various birth characteristics may influence healthy childhood development, including the risk of developing childhood brain tumors (CBTs). In this study, we aimed to investigate the association between delivery methods, obstetric history, and birth anthropometrics with the risk of CBTs. This study used data from the Childhood Brain Tumour Epidemiology Study of Ontario (CBREO) which included children 0-15 years of age and newly diagnosed with CBTs from 1997 to 2003. Multivariable logistic regressions were performed to explore the association between delivery methods, obstetric history, and birth anthropometric variables, with subsequent CBT development. Models were adjusted for maternal and index child characteristics, and stratified by histology where sample size permitted. The use of assistive instruments (forceps or suction) during childbirth was significantly associated with overall CBTs (OR 1.84, 95% CI 1.30-2.61) and non-glial tumors (OR 2.57, 95% CI 1.60-4.13). Compared to first-born children, those second-born or greater had a lower risk of overall CBT development (OR 0.74, 95% CI 0.55-0.98), and glial histological subtype. All other birth characteristic variables explored were not associated with CBTs. The use of assistive devices such as forceps or suction during vaginal delivery carries potential risks, including increased risk of CBT development. There is an inverse association between birth order and CBTs, and future studies examining early childhood common infection may be warranted.

Keywords: assisted delivery; birth order; cancer; epidemiology.

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