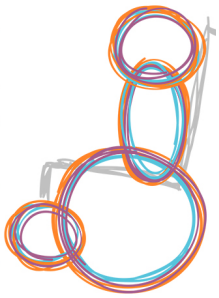
The Cerebral Palsy Demonstration Project (CPDP) aims to further the understanding of Cerebral Palsy (CP) through a national registry of affected children and a collaborative research platform across Canada

childhood disability LINK



Summary

Cerebral palsy is the most common developmental disability among children, yet current therapies are limited to supportive and rehabilitative measures. These limitations are partly due to the heterogeneity of the disorder, which has hindered a complete understanding of its causes and mechanisms. NeuroDevNet has established the Cerebral Palsy Demonstration Project (CPDP) as a comprehensive registry of Canadian children with CP and as a collaborative research platform for investigators across the country. The CPDP aims to achieve a better understanding of the genetic and environmental factors that predispose children to CP and potential avenues for its prevention and treatment.

The CPDP aims to compile a national registry of children with CP and also to bring together researchers across Canada to examine trends in this registry and apply them to animal models. The CP registry will give a comprehensive epidemiologic profile of CP in Canada, including the type, etiology, and comorbidities of particular cases. Cross linkage to perinatal databases will allow for assessment of perinatal risk factors. High resolution brain imaging will facilitate a better understanding of brain injury in CP, and genetic analyses will classify specific target genes that display copy number variations in CP. Finally, animal models will be used to explore preventative and regenerative treatment options for CP, including stem cell therapies using induced progenitor cells from the affected subject.

What families should know

The underlying causes and mechanisms of CP are not yet well understood, in part due to their complexity and heterogeneity. Various risk factors may predispose a child to CP, but for many, the effect has been hard to characterize. Common to all CP diagnoses is an early-onset neurological deficit that impairs motor control, but about half of affected children also

display other neurological deficits that impair cognitive abilities, language skills, or social behavior. These comorbidities complicate CP and place greater burdens on families. The CPDP aims to facilitate a deeper understanding of genetic markers and risk factors for CP, enabling earlier identification and prognosis for the disorder. In addition, the CPDP registry will provide an accessible avenue for researchers to share information with parents about services for their children.

What practitioners should know

CP has been difficult to treat aggressively not only because of its heterogeneity, but also because early detection is difficult. About one third of children with CP present with normal or non-significant neuroimaging findings, and in many, when the causative brain injury does not occur during or immediately following birth, it occurs during gestation when detection is very hard. The CPDP will compile genetic and phenotypic information from CP children and their families across Canada, furthering the understanding of subtle neuroimaging findings and genetic markers. In addition, case-control studies can be used to identify the significance of particular risk factors for CP, such as prematurity, maternal infection, and neonatal brain injury. Beyond the CP registry, this study will also use animal models to find and test strategies to prevent and treat CP for future use in humans.

Reference

Shevell, M., Miller, S., Scherer, S., Yager, J., Fehlings, M. (2011). The cerebral palsy demonstration project: a multidimensional research approach to cerebral palsy. Seminars in Pediatric Neurology, 18, 31-39

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