Neurodevelopmental Outcome in Preterm Infants

Research overview

Children who are born very preterm (<30w gestational age) suffer from long-term health problems and some children struggle with ongoing difficulties in their development. We know that many very preterm babies have been exposed to inflammation before they are born; a common antecedent to preterm birth.

Neurodevelopmental outcomes after very preterm birth are influenced by many factors, which makes studying any one contributing factor challenging. There is some evidence that exposure to perinatal inflammation (chorioamnionitis) increases the risk of neurodevelopmental conditions such as cerebral palsy, but the role of that early-life exposure for long-term neurodevelopmental outcomes is poorly understood. Available studies typically are limited by small sample sizes and focus on short-term outcomes rather than long-term follow up. Most importantly, this is the largest study to date investigating the relationship between exposure to histological chorioamnionitis (the diagnostic gold standard) and outcomes at age 2 years. This data linkage project allows us to examine the long-term development of babies who were born very preterm and who were exposed to inflammation before birth. Here we combined histology data with clinical information from birth and the neonatal period and 2 year functional outcomes from the Neonatal Follow up program.

Our preliminary analysis suggests that exposure to chorioamnionitis and early- and late-onset sepsis uniquely contributes to the long-term developmental vulnerabilities. However, comprehensive analyses with further data are currently underway. With data on more than 1800 children available, we have the unique opportunity to link their early neonatal history with statewide databases hosting information about disabilities and even school-outcomes. This will provide an unpresented set of information to achieve a more comprehensive understanding of the factors associated with long-term outcomes following very preterm birth and may unravel new avenues for prevention, prognostication and treatment options.

Our team is led by Assoc/Prof Tobias Strunk, whose research is focussed on neonatal immunology/infection and the effects of early-life exposure to inflammation. Associate Prof Noel French and Dr Catherine Campbell from the Neonatal Follow-up Program at King Edward Memorial Hospital, offer their expertise in the neurodevelopment of children, and early career statistician Dr Eva Malacova, assists the team in merging and analysing major datasets as to identify trends and relationships that help us improve our understanding of this common complication of preterm birth.

THE TEAM

Investigator
Dr Catherine Campbell

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