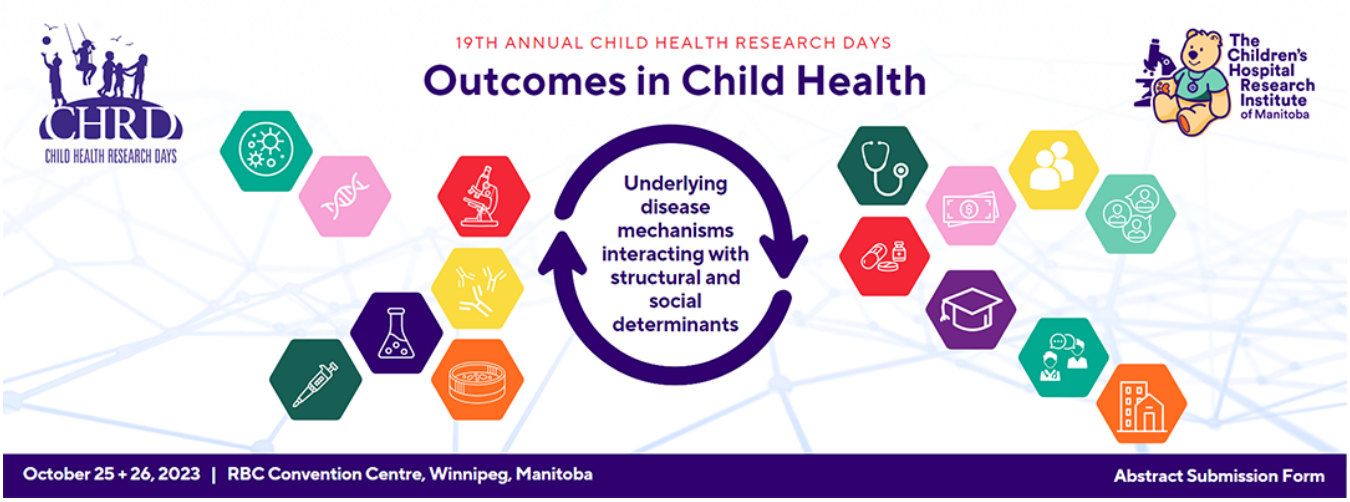

CHRD 2023: Abstract Submission Form

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Presenter Status
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Research Category
Clinical

Role in the project
Design
Analyze Data
Write Abstract

Title
Individuals born with congenital surgical anomalies are at increased risk of neurodevelopmental disorders: a 30-year population-based cohort study

Background
Improvements in medical and surgical care of children with major congenital anomalies have decreased the associated mortality. As mortality improves, long-term comorbidity associated with these conditions is increasingly important. Research on neurodevelopmental outcomes in this population is sparse.

Objective
This study assessed whether infants born with a major congenital anomaly requiring neonatal surgery, referred to as congenital surgical anomalies (CSA), are at increased risk of neurodevelopmental disorders compared to date-of-birth matched controls.

Methods
We identified 818 children born with a CSA and 8164 controls from children born in Manitoba between 1991 and 2022. Anomalies included esophageal atresia, congenital lung lesions, congenital diaphragmatic hernia, gastroschisis, omphalocele, intestinal atresia, Hirschsprung disease, and anorectal malformations. Neurodevelopmental diagnoses were obtained using International Classification of Diseases 9 codes. The four neurodevelopmental disorders of interest were autism spectrum disorder (ASD), attention deficit hyperactivity disorder (ADHD), intellectual disability (ID), and specific developmental delays. Multivariate hazard ratios (HR) controlling for sex, socioeconomic status and comorbid chromosomal anomalies such as Trisomy 21 were calculated.

Results
We included 818 children (463 male, 355 female) with CSA. Median age at analysis was 11.5 years (IQ25-75%ile=4.75-18.60). In cases, there was a high prevalence of ASD (3.8%; CI95=2.5-5.1%), ADHD (12.8%; CI95=10.5-15.1%), ID (2.2%; CI95=1.2-3.2%), and specific developmental delays (17.5%; CI95=14.9-20.1%). Compared to birth-matched controls, Individuals born with MCAs are at an increased risk of ASD (HR=1.55; CI95=1.00-2.40), ADHD (HR=1.33; CI95=1.07-1.66), ID (HR=2.35; CI95=1.09-5.07), and specific developmental delays (HR=2.25; CI95=2.11-4.01). Across all patients, female-sex was associated with significantly decreased risk of ASD (HR=0.37; CI95=0.27-0.51), ADHD (HR=0.48; CI95=0.42-0.56), and specific developmental delays (HR=0.57; CI95=0.49-0.67), but not ID (0.87; CI95=0.48-1.48).

Conclusion
Children with congenital surgical anomalies are at increased risk of ASD, ADHD, ID, and specific developmental delays, even when controlling for chromosomal anomalies. Directed screening, support and early intervention for these neurodevelopmental disorders are warranted.

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