

MAPK pathway. Clinical trials are needed to substantiate the findings reported in this case series.

P049

SEX-RELATED DIFFERENCES AND THE INFLUENCE OF PREGNANCY ON CARDIAC OUTCOMES IN ADULTS WITH A SYSTEMIC RIGHT VENTRICLE AND BIVENTRICULAR PHYSIOLOGY

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BACKGROUND: Transposition of the great arteries (TGA) with a systemic right ventricle (sRV) and biventricular physiology is associated with increased morbidity and mortality. There is a paucity of data regarding sex-related differences in outcomes in the context of a sRV. Moreover, pregnancy has been associated with deterioration of sRV function in short-term post-partum follow-up, but the long-term impact remains largely unknown.

METHODS AND RESULTS: A retrospective cohort study was conducted on 214 adults, age 44.7 ± 12.3 years, with a sRV and biventricular physiology followed for a median of 13 years at an adult congenital heart disease center. No sex-related difference was identified in the prevalence of atrial or ventricular arrhythmias, permanent pacemaker implantation, hospitalization for heart failure, systemic atrio-ventricular valve intervention, heart transplant, or cardiac death. Among the 82 (38.3%) women, age 44.0 ± 12.5 years, 43 (52.4%) had at least one full-term pregnancy. Women had a lower prevalence of moderate to severe sRV dysfunction than men (21% vs 42.6%, $p=0.001$) despite similar ages. Beta-blockers ($p=0.008$), furosemide ($p=0.012$), and mineralocorticoid receptor antagonists ($p=0.028$) were less frequently prescribed to women than men. Women had fewer implantable cardioverter-defibrillators (ICDs) for primary prevention than men (3.7% vs 13.6%, $p=0.016$), with no difference in the prevalence of secondary prevention ICDs (1.2% vs 2.3%, $p=1$). The four women with a prohibitive maternal mortality risk (modified WHO class IV) complied with recommendations to avoid pregnancy. After excluding these 4 women, no differences regarding frequency of adverse cardiac events, age at the time of event, and proportion with moderate or severe sRV dysfunction were observed in women with ($N=43$) and without ($N=35$) pregnancies during 14 years of follow-up.

CONCLUSION: Women with TGA and a sRV had a lower prevalence of moderate to severe systemic ventricular dysfunction than men, along with a lower proportion of primary prevention ICDs. Following risk assessment and counselling with contraindication of pregnancy in the highest risk subgroup, pregnancy had no impact on long-term cardiac outcomes. Further mechanistic studies are required to elucidate sex-related differences, including the influence of hormonal factors on sRV function.

P050

SURGICAL OUTCOMES IN INFANTS WITH MAJOR CONGENITAL HEART DISEASE EXPOSED TO MATERNAL DIABETES IN UTERO

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BACKGROUND: Previous studies have shown that preterm birth, low birth weight, and maternal gestational weight gain influence surgical outcomes in infants with congenital heart disease (CHD). Rodent models of maternal diabetes (DM) and fetal hypoxia suggest these prenatal exposures are associated with increased risk of myocardial ischemic reperfusion injury (IRI). Whether maternal DM impacts surgical outcomes of infants with CHD, particularly those requiring cardiopulmonary bypass (CPB), and whether this relates to greater IRI, has not been explored.

METHODS AND RESULTS: Infants of mothers with DM (IDMs) undergoing CPB at < 1 year were identified and matched with infants whose mothers did not have DM, for surgical intervention, age at surgery, sex, gestational age at birth, being small for gestational age (SGA), and having genetic syndromes (trisomy 21 and 22q11.2 deletion syndrome). Outcomes included postoperative intensive care unit (ICU) and hospital lengths of stay (LOS) and measures indicative of greater IRI (Table). DM subtypes were combined for the main analyses and then separated into gestational (GDM) and pregestational DM. Surgeries were coded using the Risk Adjustment for Congenital Heart Surgery (RACHS) scale and pooled into Groups 1-3 (A) and 4-6 (B). Eighty IDMs and 149 controls were included, 188 in RACHS A and 41 in RACHS B subgroups. IDM and control groups were statistically indistinguishable in most baseline characteristics except: DM mothers were older (33 ± 6 vs 30 ± 6 years, $P < 0.001$) and more likely to deliver via Caesarean section (49% vs 34%, $P=0.03$), and IDMs were born earlier (37 ± 2 vs 38 ± 2 weeks, $P < 0.001$). Within each RACHS group, there were no significant differences in outcomes between IDMs and controls (Table). IDMs exposed to GDM exhibited trends towards similar or even better outcomes after surgery (IDMs vs controls; Group A ICU LOS: 3 ± 3 vs 4 ± 3 days, $P=0.02$; Group B highest glucose: 13.4 ± 2.0 vs 16.7 ± 3.0 mmol/L, $P=0.01$), while IDMs of pregestational DM mothers exhibited signs of worse outcomes in Group A (hospital LOS: 20 ± 29 vs 10 ± 7 days, $P=0.046$; highest urea: 11.0 ± 4.4 vs 8.4 ± 4.2 mmol/L, $P=0.04$) with trends towards worse outcomes in Group B (PRISM score: 16 ± 9 vs 10 ± 5 , $P=0.11$; highest glucose: 16.7 ± 1.3 vs 14.3 ± 2.7 mmol/L, $P=0.06$).

CONCLUSION: Though there were no significant differences in surgical outcomes between all IDMs and controls, exposure to pregestational DM but not GDM may contribute to worse outcomes. More work is needed in a larger, prospective longitudinal cohort with pre-defined variables to verify these trends.

RACHS Group A – Pooled DM			
Outcomes	Controls	IDM	Sig
ICU LOS (days)	3.6±3.0	3.9±5.4	0.17
Hosp LOS (days)	9.9±7.9	12.1±17.9	0.50
EVIDENCE OF IRI			
PRISM Score*	7.6±4.8	7.6±4.3	1.00
Lowest MV O ₂ sat* (%)	48.9±12.3	49.1±12.7	0.91
Highest lactate* (mmol/L)	3.0±1.7	2.9±1.2	0.91
Highest glucose* (mmol/L)	12.0±4.1	12.2±3.3	0.23
Highest urea (mmol/L)	8.1±4.1	9.0±4.3	0.19
Highest creatinine (µmol/L)	46.7±16.0	44.9±13.2	0.68
Days intubated	3.1±3.2	2.7±2.8	0.53
RACHS Group B – Pooled DM			
Outcomes	Controls	IDM	Sig
ICU LOS (days)	5.6±3.6	5.2±2.6	0.97
Hosp LOS (days)	24.6±18.5	24.0±16.5	0.97
EVIDENCE OF IRI			
PRISM Score*	11.3±4.6	13.2±6.2	0.30
Lowest MV O ₂ sat* (%)	41.4±13.8	43.4±9.1	0.66
Highest lactate* (mmol/L)	6.2±3.3	5.9±1.8	0.87
Highest glucose* (mmol/L)	15.6±3.1	14.8±2.4	0.44
Highest urea (mmol/L)	14.2±8.5	14.2±10.0	0.76
Highest creatinine (µmol/L)	64.3±29.6	95.5±117.9	0.65
Days intubated	8.2±6.1	9.3±4.8	0.19

Table. Surgical outcomes for IDM vs Controls by RACHS Group. RACHS: risk adjustment for congenital heart surgery; DM: diabetes mellitus; IDM: infants of mothers with DM; ICU: intensive care unit; LOS: length of stay; Hosp: hospital; IRI: ischemia-reperfusion injury; PRISM: Pediatric Risk of Mortality; MV: mixed venous. *First 24 to 48 hours

Women and Childrens Health Research Institute (WCHRI)

P051

THE FEASIBILITY OF A VIRTUAL PHYSICAL ACTIVITY COUNSELLING INTERVENTION IN CHILDREN WITH CONGENITAL HEART DISEASE

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BACKGROUND: While long-term survival has improved significantly in recent years, we are now recognizing the high prevalence of cardiovascular (CV) risk factors in children with repaired congenital heart disease (CHD). Low levels of physical activity (PA) are one of the important modifiable CV risk factors. Evidence-based interventions for this high-risk group are needed, as it is not known how to best help children with CHD to be more active. In this study, we aimed to assess the feasibility and acceptability of a PA counselling intervention in children with CHD.

METHODS AND RESULTS: We designed a 12-week PA intervention based on behaviour change theory which could be remotely delivered to children across British Columbia and the Yukon. We recruited children with moderate-to-complex CHD aged 9-12 years from BC Children's Hospital. At baseline, we measured moderate-to-vigorous PA using accelerometers and participants' readiness to change their PA using questionnaires to determine their intervention eligibility. Participants who were not meeting PA guidelines and expressed readiness to change qualified for the intervention.

The intervention consisted of 6 sessions with a PA counsellor via Zoom where participants learned strategies to increase their PA through workbook activities. We measured PA again at the intervention midpoint and post-intervention. Intervention feasibility (study recruitment and retention) and acceptability (intervention attendance and engagement) were assessed. We recruited 21 participants who completed baseline measures (48% male, 11.2 [IQR 10.4-12.1] years), although recruitment success has been lower than anticipated (53%). Of these participants, 6 were already meeting PA guidelines, 2 were not willing to change their PA, and 3 had incomplete baseline PA data. Ten participants qualified for the intervention, where 20% were male (10.8 [IQR 9.6-11.8] years) with a baseline median moderate-to-vigorous PA of 34.1 min/day (IQR 24.4-39.2). Four participants are currently participating in the PA intervention and 6 participants have completed it. Study retention has been excellent (100%), session attendance was 100% thus far, and workbook activities completed between sessions have been well received (23 completed, 7 partially completed, 3 incomplete). Median moderate-to-vigorous PA increased by 4.5 min/day ($p=0.813$, 95% CI -5.25 to 43.04) from pre- to post-intervention.

CONCLUSION: This PA counselling intervention is feasible and acceptable to families and children with CHD. Study retention rates and activity completion rates confirm that the intervention is engaging and well received by children with CHD. Preliminary objective PA data suggests that the intervention may have facilitated increased PA for participants.

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P052

THE IMPACT OF THE COVID-19 PANDEMIC RESTRICTIONS ON THE PROVISION OF ACHD CARE ACROSS CANADA

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BACKGROUND: Patients with adult congenital heart disease (ACHD) are at increased risk for poor outcomes when compared to the age matched non-ACHD population and require specialist care to optimize outcomes including well-being and survival. The COVID-19 pandemic significantly impacted healthcare provision across Canada with reduction on in person evaluations. The effect of the COVID-19 restrictions on ACHD care including clinic evaluation, diagnostic and procedures in Canada has not been well characterized.

METHODS AND RESULTS: All Canadian Adult Congenital Heart Network affiliated ACHD centers were contacted and asked to collect data on outpatient clinic and procedural volumes for the