proportion reported significant psychological distress during the pandemic.

Oral presentations

INCIDENCE OF INFECTIVE ENDOCARDITIS IN ADULTS WITH CONGENITAL HEART DISEASE AND DIAGNOSED 22Q11.2 DELETION SYNDROME

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Background: 22q11.2 deletion syndrome, formerly known as DiGeorge syndrome, is characterized by the 22q11.2 microdeletion. Conotruncal cardiac defects are commonly associated with 22q11.2 deletion patients. We aimed to determine the effect of 22q11.2 deletion syndrome on infective endocarditis (IE) incidence among adults with congenital heart disease (ACHD), with additional focus on ToF patients.
Methods: In this study, we examined the data available for 192 patients (aged 18-69 years) with ACHD and a 22q11.2 deletion confirmed through standard molecular genetic testing, followed over 6,377 person-years at the Toronto Dalglish Family 22q Clinic. We compared these data with those from a national registry involving a population of ACHD patients in the Netherlands, not tested for 22q11.2 deletions (n=10,210). A 2-Sample Poisson Rate test determined if there is a significant difference in the incidence rate of IE between populations.
Results: Within the 22q11.2 deletion-ACHD cohort (n=192), 20 (10%) patients developed IE over 6,377 person-years. Of the 192 patients, 89 (46%) have ToF and 12 (13%) of 89 developed IE. The incidence rate of IE in the 22q11.2DS-ACHD sample was significantly higher than in the Netherlands-ACHD sample (314 vs 106 per 100,000 person-years, $p<0.0001$). Restricting to adults with ToF, the 22q11.2 population incidence rate is significantly greater than in the Netherlands population (426 vs 110 per 100,000 person-years, $p=0.0021$).
Conclusions: Results indicate that the 22q11.2 microdeletion is associated with a substantially increased incidence of IE in ACHD patients and reinforces the importance of considering clinical testing for the 22q11.2 deletion in ACHD patients. We believe the 22q11.2 microdeletion is a significant additional risk factor for IE in ACHD patients. Further research will compare data from this 22q11.2 cohort to our local center's incidence of IE in all ACHD patients and determining the additional risk factors of 22q11.2 microdeletion patients that predispose them to IE.

Oral presentations

INCREASED RIGHT VENTRICULAR ENERGY EFFICIENCY BY 4DMR AFTER HARMONY VALVE IMPLANTATION

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Background: In patients with repaired tetralogy of Fallot (rTOF), it is not known how transcatheter pulmonary valve replacement (PVR) affects right ventricular (RV) kinetic energy (KE) and flow. We performed a pilot study to evaluate RV energy by 4D flow magnetic resonance (4DMR) before and after PVR.
Methods: Three rTOF patients underwent transcatheter Harmony PVR and 4DMR within 7 days before and 6 months after PVR. 4DMR velocity was corrected for phase offsets using Arterys, (San Francisco, CA). Custom Python scripts were used to obtain hemodynamic metrics by automatically reconstructing RV geometry for each timepoint in the cardiac cycle using a deep-learning based approach and computing spatially averaged turbulent KE and rate of viscous energy loss over the entire RV.
Results: Mean age was 24±10 years. Mean pulmonary regurgitant flow (PRF) at baseline was 39±11% and improved after PVR to 0%. RV systolic and diastolic peak KE's were lower after PVR (systolic KE 0.053±0.006 vs. 0.041±0.017 mJ/ml3 and diastolic KE 0.029±0.014 vs. 0.012±0.005 mJ/ml3). There was no change in systolic peak rate of viscous energy loss; however, diastolic peak rate of viscous energy loss was less after PVR (0.027±0.006 vs. 0.018±0.012 mJ/ml3). After PVR, there was higher pulmonary cardiac output (CO) (6.1±0.9 vs. 5.2±1.3 L/min). The inverse relationship between CO and RV KE suggests that after PVR, the RV is more efficient - using less energy to generate a larger CO. RV vorticity was unchanged by PVR (13±0.04% vs 12±0.01%).
Conclusions: In this first study describing changes in RV energetics after transcatheter PVR, we demonstrate increased RV energy efficiency. Although future studies with a larger cohort are needed, RV energy by 4DMR may be useful in determining optimal timing of PVR.

Oral presentations

OUTCOMES OF BALLOON VALVULOPLASTY VERSUS SURGICAL VALVOTOMY IN CONGENITAL AORTIC STENOSIS: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background: The debate regarding the best therapeutic approach for congenital aortic stenosis (AS) has persisted for decades due to equivocal evidence. Historically, the selection of interventions, primarily surgical aortic valvotomy (SAV) versus balloon aortic valvuloplasty (BAV), has depended on individual/institutional preferences. Recent single-centre studies demonstrate better outcomes with SAV; however, their results were attributed to improved surgical techniques. In this study, we perform a contemporary systematic review and meta-analysis to compare the effects of BAV and SAV on patient morbidity and mortality.
Material & Methods: We searched MEDLINE and EMBASE from inception to March 2021 for studies comparing BAV versus SAV for critical congenital AS in patients younger than age 18. We performed title and abstract screening, full-text review, risk of bias assessment using the CLARITY tool, and data collection independently and in duplicate. We pooled data using the random-effects model and the Mantel-Haensel statistical method. We evaluated the overall quality of evidence using the GRADE framework.
Results: 12 studies (n=1214) comparing outcomes for BAV and SAV in the pediatric population were included. Differences in mortality at 30-day and at longest follow-up were not statistically significant between the two groups (RR 0.66, 95% CI [0.34, 1.27] and 0.74, 95% CI [0.35, 1.56], respectively). Post-procedural aortic insufficiency was more common after BAV but failed to reach statistical significance (RR 1.5, 95% CI [0.99 – 2.99]). Reintervention favoured surgical repair at the longest follow-up but did not reach statistical significance (RR 1.11, 95% CI [0.89, 1.38]).
Conclusion: In pediatric patients with congenital AS, surgical valvotomy did not offer additional advantages over balloon valvuloplasty. There was a trend towards increased post-procedural AI and rate of reintervention with BAV. However, the quality of evidence is very low; an appropriately powered study is required to adequately address the risks and benefits of the two interventions.

Oral presentations

SYSTEMIC VENOUS HYPERTENSION AND LOW OUTPUT ARE PREVALENT AT CATHETERIZATION IN ADULTS WITH PULMONARY ATRESIA AND INTACT VENTRICULAR SEPTUM REGARDLESS OF REPAIR STRATEGY

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Background: Patients with pulmonary atresia and intact ventricular septum (PA-IVS) require intervention early in life, and most survive to a definitive procedure of either Fontan circulation or right ventricle to pulmonary artery (RV-PA) repair. It remains unknown how surgical strategy impacts hemodynamics and comorbidities in adults.
Material and Methods: Retrospective analysis of adults (age >18 years) with PA-IVS undergoing hemodynamic catheterization at Mayo Clinic, MN between