CURRENT AND DEVELOPING MULTI-CENTER RESEARCH

1. Multicenter study on significance of LGE in HCM, PI Lars Grosse-Wortmann
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   Over 400 subjects’ data has been collected for this research.

   This is a retrospective data collection of at least 400 patients with hypertrophic cardiomyopathy, who have undergone CMR with late gadolinium enhancement (LGE) assessment. DICOM images are needed for core lab analysis and RedCap clinical data collection is being used. Patients must be 21 years or less at the time of CMR and have hypertrophy. This study exclude patients with suspected or confirmed non-sarcomeric HCM. Outcome data and adverse events related to LGE analysis is planned. Contact Lars to contribute.

2. Atrial Switch Patients – Value of MRI – Margaret Samyn (msamyn@chw.org)

   This is a multi-center retrospective study of patients with d-transposition s/p atrial switch procedure. Through systematic review of CMR and Echo data, the primary goal will be to show that CMR is the “gold standard” imaging modality for this complex disease with a systemic RV. At least 200 subjects (either gender, any race, greater than 10 years old) are sought with dTGA s/p atrial switch; their most recent, archived (temporally-related) CMR and Echo images will be sent to Children’s Hospital of Wisconsin (CHW) for blinded analyses by experts in CMR and Echo Core Labs. This study has several aims, including 1) a systematic review of CMR and Echo anatomic, volumetric and strain data and 2) correlation analyses of key CMR and Echo data with clinical status, and 3) cost analyses of imaging based on frequency of scans. We will continue to seek grant funding, but will likely proceed even without this extra mural support. Thus, far 10 sites have committed to this project. Contact Margaret Samyn at msamyn@chw.org to contribute.

3. Systemic RV and heart failure, a retrospective study– Craig Broberg (brobergc@ohsu.edu)

   AHA proposal for 600+ patients with a CMR core. We will hear back from AHA by this summer.

4. Myocardial Fibrosis in Adult CHD (Craig Broberg, brobergc@ohsu.edu)

   An initial 3-year grant was submitted in October 2015 for evaluation of patients greater than 18 years old with congenital heart disease specifically, for now TOF (pacemakers OK) to evaluate fibrosis by ECV to determine if it is clinically predictive of events. Patients will undergo CMR with shMOLLI type sequence, blood draw for biomarkers, 6 minute walk test, and 24 hour ECG monitor. Correlations with ECV will be sought. Aim is for 350 patients, first enrolled from sites in the HCMR study. If grant funded, will start in Jan 2018. Contact Craig for more information.

5. Cost Effectiveness of CMR – Mark Fogel (fogel@email.chop.edu)

   Multiple echocardiograms are ordered with poor image quality and can be inadequate for answering clinical questions. MRI can often answer clinical questions or provide better overall assessment for routing monitoring. Which
is more cost effective? First plan is a retrospective assessment for cost of multiple echoes vs CMR that answered the question. Cost and time could both be assessed. Second plan would be a prospective study. Hoping for funding with a PICORI grant, industry, or insurance. Partnership with nonclinical faculty (economist?) possible. This study is in the assessment and planning stages. Contact Mark to contribute.

6. 4D Flow in Twin-Twin transfusion – Wyman Lai (wlai@choc.org)

The aim of this study to determine the feasibility and potential utility of time-resolved 3D phase contrast, also known as “4D flow,” magnetic resonance imaging (MRI) in Twin-Twin Transfusion Syndrome (TTTS). This would be a prospective, descriptive study on the feasibility and utility of 4D flow MRI of the placenta in patients with MCDA pregnancies. First, pediatric cardiology, radiology, and maternal fetal medicine colleagues in the U.S., Canada, and Europe would be identified with interest and expertise in the assessment and management of TTTS. Second, a limited number of studies (estimated 5 to 10) would be performed prospectively, with feedback from each as we proceed, to determine the quality and usefulness of information from selected MRI sequences. Lastly, a protocol for future studies will be developed to evaluate the clinical utility of newer MRI sequences, including 4D flow MRI without gadolinium contrast, in the management of patients with monochorionic pregnancies at risk for or with TTTS. Contact Wyman to contribute.

7. Normative data for small children – Andy Powell/Puja Banka (puja.banka@childrens.harvard.edu)

This is a retrospective collection of CMR in children <5 years of age to obtain data for normal ventricular volumes. Clinical data surrounding CMR and biographical data will be collected using a short axis plane. Vascular ring assessment patients are a good example of cases that could be used. This project is in the planning stages. Contact Puja to contribute.

8. Acute Coronary vs. Myocarditis – Sujatha Buddhe/Brian Soriano (Sujatha.Buddhe@seattlechildrens.org brian.soriano@seattlechildrens.org)

Acute onset of chest pain with elevated troponins in previously healthy children raises the concerns for acute coronary syndrome, leading to a series of tests to rule out this entity despite the known low incidence in children. Cardiac MRI (CMR) is becoming increasingly recognized as a tool to diagnose and monitor changes found in typical myocarditis. The purpose of our current study is to evaluate the diagnostic role of CMR in children presenting with acute chest pain and elevated troponins as a multicenter study. Our secondary aim is to compare CMR to standard echocardiographic indices of function as well as strain imaging by both echo and CMR in this patient group. Contact Sujatha or Brian.

REGISTRIES

1. CMR Registry for Fontan patients – Rahul Rathod (rahul.rathod@childrens.harvard.edu)

We are in the early process of creating a multi-institution, international CMR/CT registry of Fontan patients. The goals of this registry are to create better risk stratification models in predicting adverse outcomes in this vulnerable patient population. Interested sites can email Rahul Rathod at rahul.rathod@childrens.harvard.edu

2. Aortopathy Registry – Shaine Morris (shainem@bcm.edu)