A Pediatric Cardiology-Oncology Program

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Background

- Significant improvement in childhood cancer survival in the last 40 years:
  - 5-year survival increased (58% to 82%)
  - In US: >325,000 survivors of childhood cancer
  - 24% of patients are now >30 years from diagnosis

- Cardiac mortality:
  - 10-fold higher among childhood cancer survivors
  - 3rd leading cause of death in this population

- Cardiotoxic effects:
  - Present at varying times during and after treatment
  - Vary from subclinical to clinical

- Identifying subclinical toxicity is important to prevent long term complications

- The 2013 AHA Scientific Statement:
  - Recommended more detailed monitoring, management and prevention
  - Develop evidence-based monitoring guidelines
  - Led to many adult centers initiating cardiology-oncology programs
  - Primary Goals:
    - Identify early signs of potentially reversible disease
    - Obtain baseline data for long-term follow-up studies

- Development of pediatric cardiology-oncology programs is limited

Objective

Develop a pediatric cardiology-oncology program that provides education, systematic monitoring and management of cardiac toxicity through early detection to improve outcomes in childhood cancer survivors

Methods

We would like to thank our oncology colleagues for helping us undertake this endeavor to the next level

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Results

- Started Cardiology-Oncology Clinics (various types)
  - Cardiology visits - 10x/month
  - Multi-disciplinary - 5x/month
  - Imaging only visits for pre-treatment - daily

- Started Cardiology-Oncology Program

- Developed screening protocols

- Work with all oncology specialties (Solid tumor, Leukemia/Lymphomas, Neuro-oncology, Bone Marrow Transplant)

- Provide direct communication between oncology and primary cardiology team

- Scheduling pathway for clinic visits vs echocardiogram visits

- At every clinic visit, patients meet a pediatric cardiologist
  - Direct necessary testing
  - Review results and plans
  - Educate about potential long term complications

- The majority of families are surprised of the potential long term complications and the need for life long follow up until told by the cardiologist

- 2012 – 2019

  2000 visits

  200 cardiac abnormalities

  Anthracyclines

  700 patients

  100 cardiac abnormalities

Conclusions

- We have built a dedicated team/program focused on cardiology-oncology, addressing an important gap in pediatrics.
- This has resulted in earlier detection of cardiac abnormalities, better communication between specialist and parents, and research alliances.
- Similar rate of detection as seen in adult studies
- Increased education of patients and families

Clinical Changes

Cardiology-Oncology Clinics – 2016 - All Adult Programs

Cardiologist Staffed Clinics

- Cardiology specific clinics
- Multi-Disciplinary clinics
- Add into primary clinics
- Overlap clinic days between specialties

Echocardiogram Protocol

- Image quality
- Complete Study
- Systolic function
- Diastolic function
- Strain Data (apical and parasternal)
- RVESVSE for clots and patency
- Intra-cardiac shunts
- Always compare/trend to prior

Multi-modality Screening Protocol

- EKG
- Serum Biomarkers after completing treatment x1
- Holter monitor after 5 years of completion
- MRI if any change/abnormality in above
- Stress test with symptoms
- Radiation (Evaluate Lipid Profile, CAD risk, Hypertension, high risk CVA)

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