How to Decipher Echo and Nuclear Test Results

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Disclosures

I have no relevant relationships with commercial interests to disclose.
Overview

• TransThoracic Echocardiogram (TTE)
• TransEsophageal Echocardiogram (TEE)
• Stress Echocardiogram (Stress Echo)
• Nuclear Stress Test (Nuc)

A Word About Cardiology Reports

• Look for the Report Summary First
• Know Why You Ordered the Echo and Make a Clinical Correlation
• If You Do Not Understand a Result, Call Someone
Transthoracic Echocardiogram

Left Ventricle (LV)

- Systolic Function = Ejection Fraction
  - Hyperdynamic  >70%
  - Normal  >55%
  - Low Normal  50-55%
  - Mildly Depressed  40-49%
  - Moderately Depressed  30-39%
  - Severely Depressed  <30%
LV Wall Motion Abnormalities

- Normal
- Grade I
- Grade II
- Grade III
Left Ventricular Size/Thickness

- Size
  - Normal
  - Dilated
- Thickness
  - Normal
  - Left Ventricular Hypertrophy (LVH)
    - Mild, Moderate, Severe

Left Ventricular Abnormalities/Masses

- Hypertrophic Cardiomyopathy
- Apical Cardiomyopathy
- Takotsubo Cardiomyopathy
- LV Aneurysm
- Ventricular Septal Defect
- Apical Thrombus
- Tumors
Right Ventricular Size and Function

- Size
  - Normal
  - Dilated

- Function
  - Normal
  - Abnormal
    - Mild, Moderate, Severe Dysfunction

Right Ventricular Abnormalities/Masses

- Tumors
- Pulmonary Embolus/Thrombus-in-Transit
- RV Pacer Wire
Left Atrium

- Size
- Structure
  - LA Appendage
  - Pulmonary Veins
- Abnormalities/Masses
  - Thrombus
  - Tumors

Right Atrium and Atrial Septum

- Right Atrium
  - Size
  - Abnormalities/Masses
    - Chiari Network
    - Eustachian Valve
- Atrial Septum
  - Atrial Septal Defect
  - Patent Foramen Ovale
Aorta

- Aortic Diameter
  - Aneurysm
    - Small (4-4.5)
    - Mod (4.5-5)
    - Large (5-5.5)
    - Surgical (>5.5)
- Limitations
- Coarctation

Aortic Valve Structure

- Leaflets
  - Normal = Tricuspid
  - Abnormal
    - Bicuspid
    - Uni/Quadri
- Calcification
- Vegetation
- Masses
Aortic Valve Function

- Aortic Stenosis
  - None  > 2.0cm²
  - Mild  1.5-1.9cm²
  - Moderate  1.0-1.5cm²
  - Severe  < 1.0cm²

- Aortic Regurgitation
  - Severity Based on Doppler

Mitral Valve Structure/Function

- Leaflets
  - Anterior and Posterior
- Mitral Valve Prolapse
- Mitral Annular/Leaflet Calcification
- Vegetation
- Masses
Mitral Valve Abnormalities

- Mitral Regurgitation
  - Measured by Color Doppler
  - Grading
    - Trace, Mild, Moderate, Severe
  - Etiologies
    - Ischemic, Functional, Prolapse
- Mitral Stenosis
  - Measured by Doppler
  - Grading is the Same as MR
  - Etiology

Tricuspid Valve Structure/Function

- Similar to Mitral Valve Structure
- Gradient across TV Determines Pulmonary Hypertension
- Tricuspid Regurgitation
  - Mild, Mod, Severe
- Tricuspid Stenosis
  - Unusual
  - Ebstein’s Anomaly
Pulmonary Hypertension

- Determined by Doppler of Tricuspid Regurg Jet
- Measured in “mm Hg”
- Severity
  - Normal  < 40
  - Mild  40-49
  - Moderate  50-59
  - Severe  >60
- Poor Images/No TR = Limit Reporting of PHTN

Pulmonic Valve Structure/Function

- Similar to Aortic Valve Structure
- Pulmonic Stenosis
  - Most Common Congenital Abnormality of the PV
- Pulmonic Regurgitation
- Vegetations
- Masses
Pericardium

- Pericardial Effusion
  - Trace
  - Small
  - Medium
  - Large
- Tamponade
- Pericardial Cyst

Miscellaneous

- Electrocardiogram
  - AFib, SVT, Pauses, etc.
- Pleural Space
- Liver
- Inferior Vena Cava
TransEsophageal Echo

- Description
  - Anesthetic
  - Sedation
  - Probe
- Indications
  - Poor TTE Windows
  - Vegetations
  - Stroke/Atrial Appendage
- Limitations

Stress Echocardiogram

- Description
  - Bruce Protocol Stages, BP/HR/ECG
- Indications
- Stress Report
  - Exercise Ability and ECG
  - EF Assessment
  - Rest/Stress Ischemia Evaluation
Stress Echo Ischemia Evaluation

Nuclear Stress Test

- Nuc, Cardiolyte, Thallium, Myoview
- Description
  - Rest/Stress Injection, Exercise vs Lexiscan
- Indications
- Stress Test Report
  - Type of Test (Exercise or Pharmacologic)
  - EF Assessment
  - Ischemia Evaluation
Nuclear Ischemia Evaluation

Summary

- Know the normal values for TTE, TEE, Stress Echo, and Nuclear
- Be able to identify abnormal results and translate them to a clinical situation
- If you are unsure of a result or statement, call the person who read it
Thank You