

Cardiac Ultrasound

Topic: Evaluating Ventricular Failure

1. Definition
 - a. Ventricular failure can be organized into systolic and diastolic dysfunction (<https://www.ncbi.nlm.nih.gov/pubmed/7713107>). Echocardiography can diagnose ventricular failure and the severity of each type of dysfunction.
2. Purpose
 - a. Determine type of dysfunction
 - b. Determine severity of dysfunction
 - c. Define parameters of the dysfunction
3. Types of dysfunction
 - a. Systolic
 - i. Wall motion abnormalities
 1. Hypokinesis
 2. Akinesis
 3. Aneurysmal
 4. Normal
 - ii. Ejection Fraction
 1. Simpsons method of discs
 2. 3D assessment
 - b. Diastolic
 - i. Early filling
 1. E wave
 - ii. Atrial filling
 1. A wave
 - iii. Tissue Doppler
 1. e'
 - iv. Left Ventricle End Diastolic Pressure
 - v. Pulmonary vein flow
4. Transducer Placement and Doppler
 - a. Systolic
 - i. Apical Four Chamber
 1. 4th-5th intercostal space
 2. Probe marker toward the floor
 3. Septal and Lateral Walls
 4. Coronary Perfusion
 - ii. Apical Two Chamber
 1. 90 degree counterclockwise rotation from Apical Four
 2. Inferior and Anterior Walls
 - b. Diastolic
 - i. Apical Four Chamber
 1. 4th-5th intercostal space

- 2. Probe marker toward the floor
 - ii. Pulsed Wave Doppler
 - 1. Ventricular side of Mitral Valve
 - a. E wave
 - b. A wave
 - 2. Pulmonary vein
 - a. S and D waves
 - iii. Tissue Doppler
 - 1. Pulsed Wave
 - 2. Lateral Mitral Valve Annulus
- 5. Coronary Perfusion
 - a. Right Coronary Artery
 - i. Basilar Septal Wall
 - ii. Basilar and Mid Inferior Wall
 - iii. Right Ventricle
 - b. Left Anterior Descending
 - i. Distal Septal Wall
 - ii. Distal Inferior Wall
 - iii. Anterior Wall
 - c. Circumflex
 - i. Infero-lateral Wall
 - ii. Mid Septal Wall
 - iii. Lateral Wall