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BASIC CARDIAC RADIOLOGY

Prachi Agarwal, MD
Assistant Professor
Cardiothoracic Radiology

Fall 2008
Objectives

• Understand available imaging modalities
• CXR Diagnostic approach
• Unknowns
Imaging modalities

- Radiography
- Echocardiography
- Nuclear Medicine
- Computed tomography
- Magnetic resonance imaging
- Angiography
Diagnostic Approach

• Need to evaluate
  1. morphology
  2. physiology
Normal Cardiac Contours
normal frontal view

Source Undetermined

Gray’s Anatomy, imgur.com
normal lateral view
Enlarged Right Atrium
Enlarged Right Ventricle
Enlarged Right Ventricle (lateral CXR)
Enlarged Left Atrium
Enlarged Left Atrium

calcified mitral annulus
Enlarged Left Ventricle
Enlarged Left Ventricle
Chest Radiograph

Cardiovascular Physiology

- Pulmonary Blood Flow
- Pulmonary Artery Pressure
- Capillary Wedge Pressure
Pulmonary Blood Flow
Normal Flow Pattern
Normal Flow

Increased Flow
Normal Flow

Decreased Flow
Normal Flow

Pulmonary Hypertension
Lung Water

pulmonary edema

Wedge pressure
Normal Flow

Redistribution
Secondary Pulmonary Lobule

- polyhedral shape
- center:
  - artery, bronchus, lymphatics
- periphery:
  - veins, lymphatics
- borders:
  - interlobular septa
  - 0.1 mm thick, 1-2 cm long
- 1 - 2.5 cm in size
- 3 - 12 acini

interlobular septa – Kerley B lines on CXR
UNKNOWNNS
54 year old with dyspnea on exertion

a) mitral valve disease
b) atrial septal defect
c) primary PHTN
d) pulmonary edema
54 year old with dyspnea on exertion

- a) mitral valve disease
- b) atrial septal defect
- c) primary PHTN
- d) pulmonary edema
24 year-old with heart murmur

- a) pulmonic stenosis
- b) ASD
- c) fluid overload
- d) primary PHTN
24 year-old with heart murmur

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Special thanks to Philip N. Cascade, M.D. Cardiothoracic Radiology, University of Michigan
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