

Cardiac

1. Normal anatomy and physiology
 - Normal cardiac structures found on CXR, CT and MR
 - Common variations in pulmonary venous and great vessel anatomy
2. Basic techniques of cardiac CT and MR, including limitations and common artifacts
3. Thoracic aorta and great vessels
 - Acquired aortic and great vessel disease (including dissection, aneurysm, intramural hematoma, penetrating ulcer, ulcerating plaques, sinus of Valsalva aneurysm, pseudocoarctation)
 - Congenital aortic and great vessel disease (including coarctation, aortic arch/great vessel anomalies)
 - Takayasu arteritis
 - Advantages and disadvantages of CT, MR and echocardiography
4. Ischemic and non-ischemic heart disease
 - Coronary artery anatomy on cardiac MR and CT (including right, left main, left anterior descending, left circumflex, obtuse marginals, diagonals, acute marginals, septal perforators, myocardial bridging)
 - Atherosclerotic coronary artery disease
 - Imaging characteristics of myocardial infarction and its complications (including left ventricular failure, myocardial rupture, papillary muscle rupture, ischemic cardiomyopathy, left ventricular aneurysm and pseudoaneurysm, coronary-cameral fistula, cardiac dyskinesis and akinesis)
 - Cardiomyopathy (including dilated, hypertrophic and restricted)
 - Arrhythmogenic right ventricular dysplasia
 - Benign cardiac tumors (including myxoma, lipoma, fibroma, rhabdomyoma)
 - Primary and metastatic malignant cardiac tumors (including angiosarcoma, rhabdomyosarcoma and lymphoma)
 - Cardiac calcifications
 - Congestive heart failure, Kerley lines
5. Cardiac valvular disease (CXR, CT, MRI)
 - MRI pulse sequences, appropriate imaging planes, and
 - Quantitative measurements on MRI of pressure gradients, regurgitant fractions and valve area
 - Etiology of common valve disease
6. Pericardial disease (including calcification, effusion, cyst, constrictive pericarditis, hematoma, metastases, partial and complete absence of the pericardium, pneumopericardium, and role of MRI and CT)
7. Congenital heart disease in the adult (CXR, CT and MR)

- Coronary artery anomalies
 - Left-to-right shunts (including atrial septal defect, ventricular septal defect, partial anomalous pulmonary venous connection, patent ductus arteriosus) and Eisenmenger physiology
 - Tetralogy of Fallot and pulmonary atresia with ventricular septal defect
 - Congenitally corrected transposition of the great arteries
 - Persistent left superior vena cava
 - Ebstein's anomaly
 - Cardiac malposition, including abnormal situs
 - Heart disease originally treated in childhood (including coarctation of the aorta, Tetralogy of Fallot and pulmonary atresia with ventricular septal defect, complete transposition of the great arteries, truncus arteriosus, common surgical corrections for congenital heart disease)
 - Partial anomalous pulmonary venous connection
8. Monitoring and support devices – “Lines and tubes” (including pulmonary artery catheter, intra-aortic balloon pump, pacemaker generator and leads, intracardiac defibrillator, atrial septal defect closure device, pericardial drain, central lines)
9. Post-operative thorax (normal post-operative findings and complications)
- Coronary artery bypass graft surgery
 - Cardiac valve replacement
 - Aortic graft
 - Aortic stent
 - Heart transplantation

Sample Questions:

1. A 65 year old man presents with atypical chest pain and shortness of breath. Based on the frontal chest radiograph, what is the most likely explanation?

- A. Aortic valve stenosis
- B. Hilar mass with malignant pericardial effusion
- C. Ascending aortic aneurysm with aortic regurgitation
- D. Congestive heart failure
- E. Chronic mitral regurgitation

Key= C



2. You are shown two slices from a CT scan of the chest of a 45 year old woman with chronic fatigue and shortness of breath. Which of the following best explains the findings on these images?

- A. Tricuspid endocarditis
- B. Atrial septal defect
- C. Pericardial constriction
- D. Biventricular heart failure
- E. Pulmonary hypertension

Key = E

