Semiology of the Heart in the 21st century

Workshop

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The cardiothoracic index

a. Is something I always mention, because it's important

b. Is something I always mention, because the clinician expects it

c. Is something I've never heard of, tell me now!

d. Is a crude way of assessing cardiac size

Answer: d
Anatomy revisited

Sense and nonsense of cardiac shape and size
Comparison XR/CT anatomy

The TA and RV are not part of the chest shadow and are formed by the esophagus and LV.
Comparison XR/CT anatomy

A non-dilated right ventricle does not fill-up the retrosternal space
Key point 1

The C/T index is not more than a initial assessment of heart size
Small heart vs Big heart

**Small heart**
- Pressure overload
  - Aortic stenosis
  - Mitral stenosis
  - Arterial hypertension
- Ventricular compliance
  - Acute MI
  - Constrictive pericarditis

**Big heart**
- Volume overload
  - Aortic regurgitation
  - Mitral regurgitation
  - Tricuspid regurgitation
- Myocardial failure
  - High output state
  - Congestive CM
Case 2
Question

The changes indicated by the arrow are a sign of

a. Descending aorta tortuosity

b. **Left atrial dilatation**

c. Left ventricular dilatation

d. A large pericardial effusion or mass

Answer: B
Left atrial dilatation

E.G.: Non-compaction cardiomyopathy
Left atrial dilatation

- **Signs on chest XR**
  - Double density on the left side
  - Convex left atrial appendage
  - Spreading of the carina
  - Displacement of the left main stem bronchus

- **CT**
  - > 4 cm transverse diameter depending on subject
Enlarged left atrial appendage
Left heart dilatation

- Left atrial dilatation
  - Mitral valve stenosis & regurgitation
  - Left ventricular failure
  - Atrial fibrillation
  - Congenital etiology (VSD, PDA, …)
Question

- This is a clear case of
  a. Pericarditis
  b. Left & right atrial dilatation
  c. Right ventricular dilatation
  d. Acute pressure overload due to aortic stenosis

Answer: B
Right heart and left atrium dilatation
Right heart dilatation

- **Right atrial enlargement**
  - Significant displacement to the right of the spine
  - Prominent convexity superiorly near the SVC junction
  - On a lateral view, displacement behind the IVC mimicking left ventricular dilatation

- **Right ventricular enlargement**
  - Uplifted apex
  - Filling of the retrosternal space on a lateral view
  - Posterior rotation of the heart
Right heart dilatation

Scimitar vein in patient with ASD
Key point II

Always look at the chest vessels for clues regarding right heart pathology
Question

- The following statement is correct
  a. Patient A has a calcified epicardial Ecchinococcus cyst
  b. Patient B has extensive mitral and aortic valvular calcifications
  c. Patient A has a left apical ventricular aneurysm
  d. Patient B has an old calcified myocardial infarction

Answer: C
Left ventricular dilatation

- E.G.: Myocardial infarction
  - Mostly occlusion of coronary artery

- Key imaging facts
  - Rounding of the cardiac apex
  - Enlargement of left ventricle to the left, inferior and posterior
    - Large right atrial enlargement may mimic left ventricular enlargement
  - Effects of changed wall kinetics: developing of aneurysm
Left ventricular dilatation: MI
Left ventricular dilatation: MI
Left ventricular dilatation: MI
Left ventricular dilatation: MI
Left ventricular dilatation: MI
Left ventricular dilatation: MI
Old pericarditis
Cardiac and pericardial calcifications

- **Calcifications**
  - Marker for specific disease
  - Aid for locating structures: valves, pericardium

- **Etiology**
  - Mostly dystrophic
  - Secondary to previous infectious or inflammatory process
    - Rheumatic mitral stenosis, TB
  - Degeneration of malformed structure
    - Bicuspid aortic valve
Cardiac valvular calcifications

- Aortic valve calcifications
Cardiac valvular calcifications

- Annular mitral valve calcifications
Cardiac valvular calcifications

- Annular mitral valve calcification
Key point III

Location is key in the differential diagnosis of calcifications
Last question
The favorite Belgian beer of yours truly is:

- a. Heineken
- b. Duvel
- c. Hoegaerden
- d. West-Malle Trappist

Answer: B
Thank you!