CT CARDIAC ANGIOGRAPHY

A RADIOGRAPHER’S PERSPECTIVE
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WHAT IS CT CORONARY ANGIOGRAM?

• Non invasive
• Low risk
• ECG Gated
• IV contrast scan of the coronary arteries
CT V ANGIOGRAM

- For patients with chest pain but not having a heart attack
- Radiation may be 50% less than traditional examinations (angiogram and Nuc Med combined) Lima 2012
- Sensitivity 91%
- Specificity 92% Budoff 2016
- Highly accurate
- Non invasive
PREPARATION

- Cardiac angiography is only possible if the patient is well prepared
- Heart rate less than 60 bpm
- Green cannula in right cubital fossa
- Comfortable clothing
- Relaxed and not anxious
- Contraindications
- Pacemaker
PRE-ASSESSMENT

- Examination explained
- Medical history
- Heart rate, blood pressure and renal function checked
- Medication prescribed if required
- Anxieties addressed
- Morning of test advice-no caffeine
ON THE DAY

- Patient arrives
- Top changed if necessary
- HR checked – oral beta blockers/ivabradine if required
- Cannula fitted
ECG LEADS

• **3-electrode system**
  - Uses 3 electrodes (RA, LA and LL).
  - Monitor displays the bipolar leads (I, II and III)
  - To get best results - Place electrodes on the chest wall equidistant from the heart (rather than the specific limbs)
VEINS OF THE FOREARM
IN THE SCAN ROOM

- Patient positioned on the table
- Connected to HR monitor
- Breath exercise
- Cannula flushed with the IV contrast pump
- IV beta blockers if required
- Slide into start position
IN THE CONTROL ROOM

- Patient name and examination selected on scanner
- Protocol should always be double checked
- **Cardiac calcium score**
- GTN given - Nitroglycerin
- Plan CT angiogram
CT ANGIOGRAM

• Protocols...

• Standard CT angiogram
• Graft protocol:
• TAVI protocol: gated root then whole aorta
• CTA followed by angiogram of the aorta
• CTA and portal abdomen and pelvis
AFTERCARE

- Post scan BP and HR obs 15 mins after scan
- Hot drink and a biscuit
- Information leaflet
- Sign off
- Remove cannula
HIGH CALCIUM SCORE
RIGHT CORONARY ARTERY

RCA from right coronary Sinus
LEFT ANTERIOR DESCENDING
3D RECONSTRUCTION

- Aorta
- Left main artery
- Right coronary artery
- Left circumflex
- Ramus intermedius
- Left anterior descending
3D VOLUME RENDERING : HEART

- RCA
- Diagonal Branch
- LAD
- Acute Marginal Branch
ANOMALOUS LEFT CIRCUMFLEX

RCA

LCx
FISTULA

Pulmonary artery

Saccular aneurysm

Fistula
GRAFT-LIMA TO LAD
GRAFT
LEFT CIRCUMFLEX ANEURYSM

Stent

Left circumflex aneurysm with a dissection flap
3D AORTIC ROOT

Aorta

Mitral valve

Left ventricle