

# Read with the experts

## Echo and New technology – strain imaging 03.09.07

### Strain and strain rate

Cases – ischemic cardiomyopathy

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## Strain rate imaging:

- Irrespective of method is basically:
  - About systolic function
  - Regional function
  - An add-on to ordinary echo
    - Resolving uncertainties
    - Supplementary quantitative information
      - Deformation rate
      - Timing
    - More detailed spatial information
      - Location
      - Extent

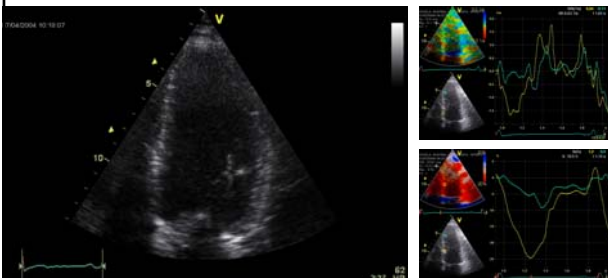
## Using strain rate imaging:

- Use all modalities:
  - Curved M-mode (strain rate)
    - Extent and timing
    - Visualise artefacts
  - Traces
    - Velocities
    - Strain rate
    - Strain
    - Timing

## Clinical case

- Man 34 years, smoker, no family history
- 08.30 acute chest pain, nausea, duration 1H
- Admitted 10.00. No pain.
- HR 60, BP 140/90, ECG normal
- Initial echo described as normal
- After 2 hours new chest pain
- 2 – 3 mm precordial ST – elevation
- Initial CK-MB 34 ug/l, TnT 0.36

## Initial echo



## Coronary angiography:

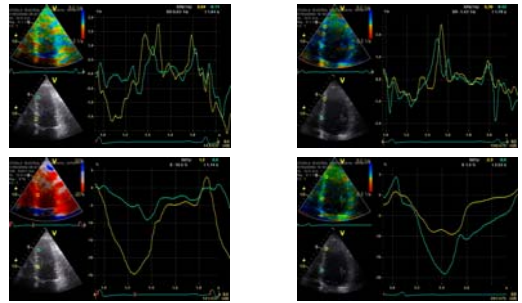


Before After  
PCI with stent delivery

## Echocardiography after one week:



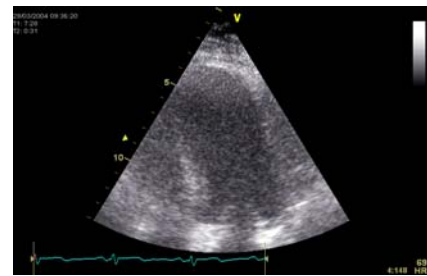
## Tissue Doppler:



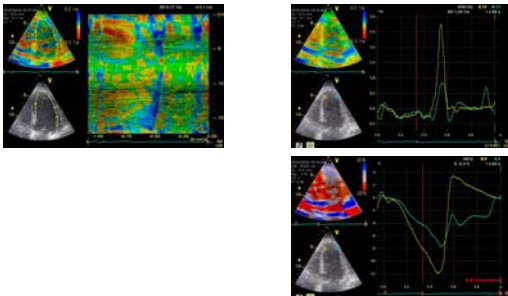
## Clinical case

- Man 54
  - Hypertension, cholesterol, familial CHD
  - 1 year intermittent chest pain during effort
  - No resting pain
  - Positive exercise ECG at 100W

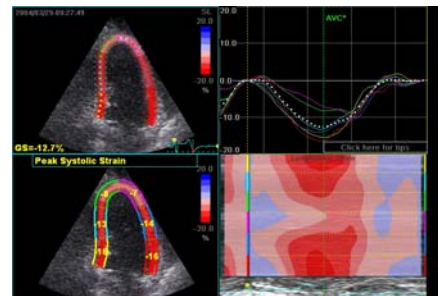
## Baseline echo



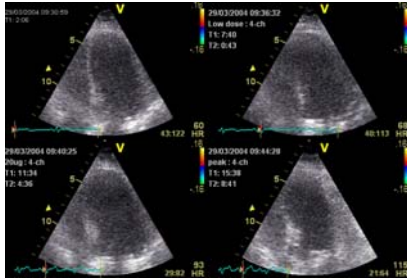
## Baseline echo



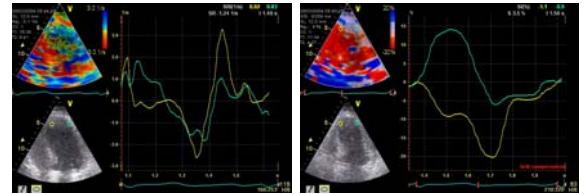
## Baseline echo



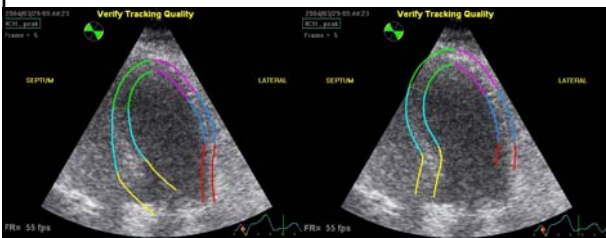
## Stress echo



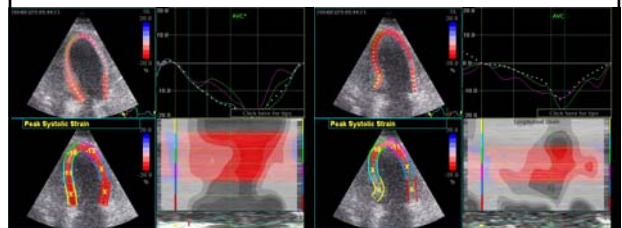
## Peak stress:



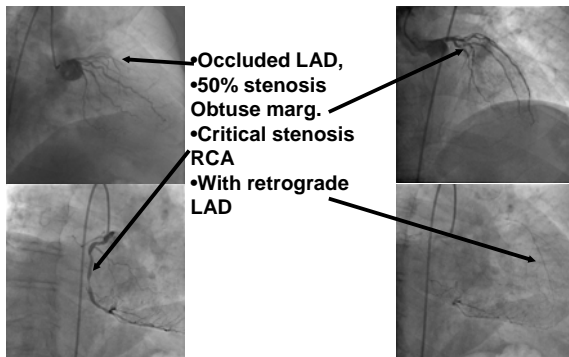
## Speckle tracking



## Speckle tracking



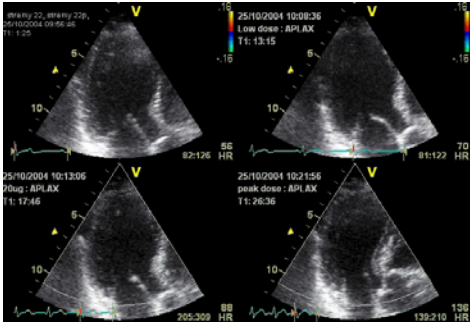
## Angiography



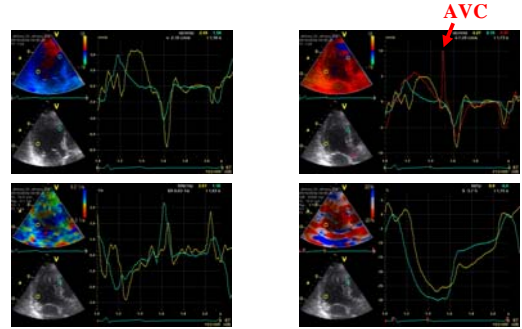
## Clinical case:

- Woman 64 years, hypertension, DM II.
- Pain both axillae and arms while walking. Especially uphill.
- Worsening during cold weather.
- Positive Exercise ECG, pain and ST depression at 100W V4 - V6

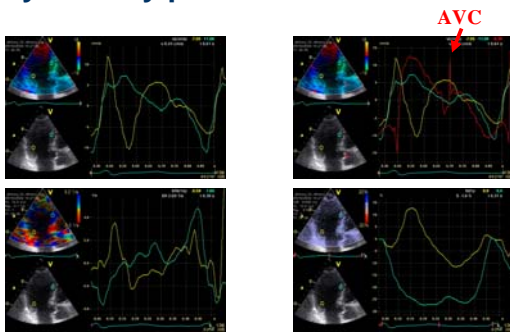
## Stress echo:



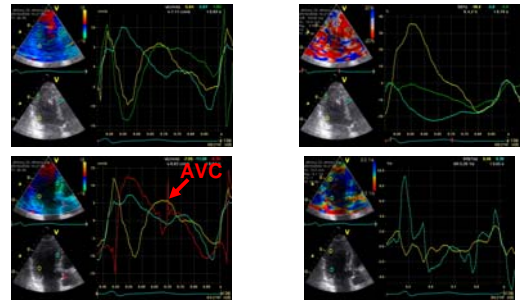
## Asynchrony baseline:



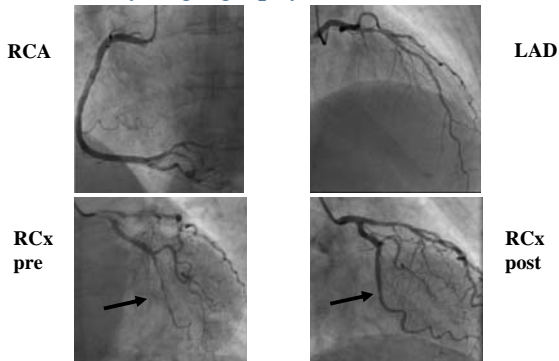
## Asynchrony peak:



## Velocity vs Strain:



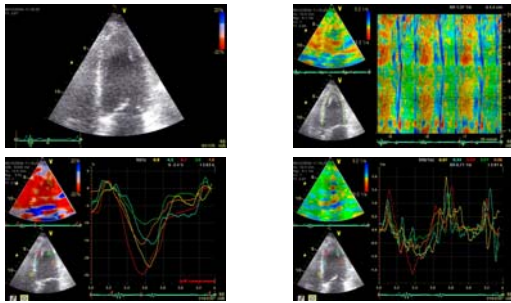
## Coronary angiography:



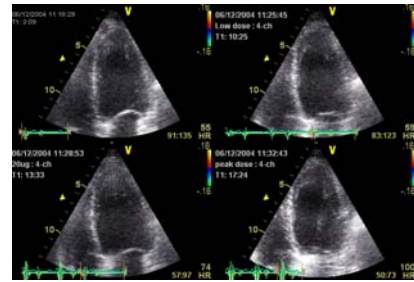
## Case

- **Man 61.**
  - Hypertension, smoking, elevated cholesterol, familial CHD
  - 3-4 months intermittent effort anginal chest pain.

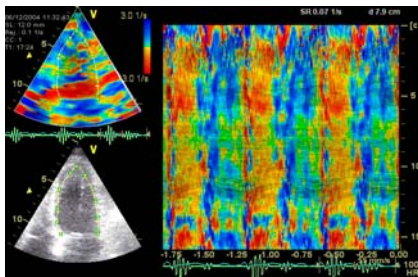
## Baseline echo



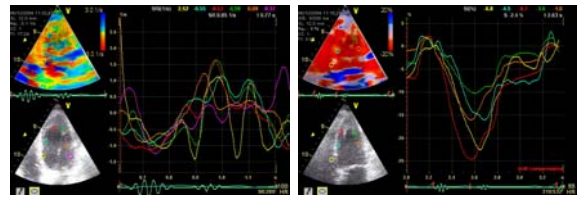
## Stress echo



## Peak stress: SRI CMM

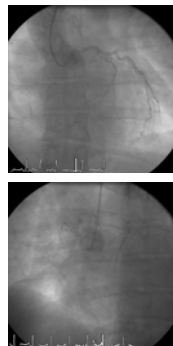


## Peak stress

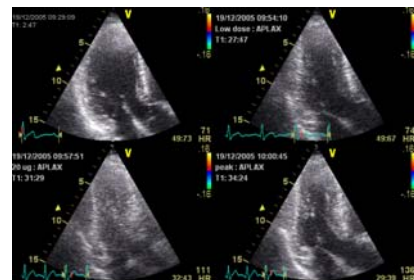


## Coronary angiography

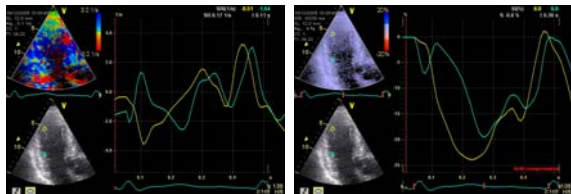
- High grade left main stenosis
- Proximally occluded LAD - retrograde filling from RCA
- Sign. stenosis 2nd marginal
- Occluded RCA - Collateral filling



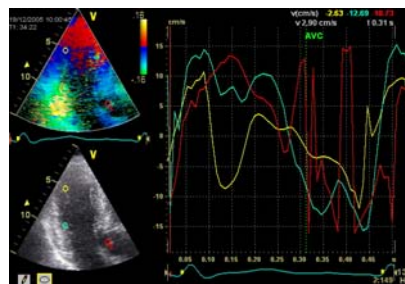
## New case- stress echo



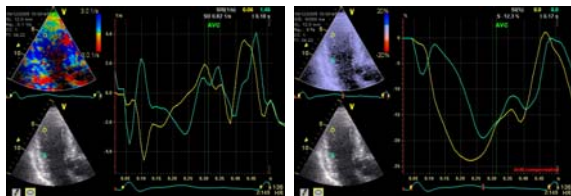
## Strain/strain rate



## Velocity:



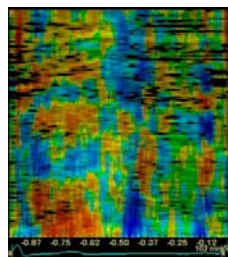
## Strain/strain rate



## Coronary angiography



## Discard all segments with poor quality data:



## Reverberation artefact:

