Troponins beyond ischaemic heart disease
What is it?

Protein complex – T, I, and C components.
Regulates actin/myosin interaction.
Cardiac T and I isoforms are distinct
Does a troponin rise mean myocyte death?

**Pro**
- Large molecules
- >98% is bound within the contractile elements

**Con**
- Conditions in which some troponin ‘leak’ occurs without any demonstrable ill effect
Some causes for troponin elevations

- MI
- Heart failure
- PE
- Arrhythmias
- Myocarditis/pericarditis
- Shock
- Exertion
- Toxins
- Renal failure
- Trauma/iatrogenic
- False positive
Does it matter which test?

Trop I and Trop T tests have the same sensitivity for cardiac ischaemia.
Renal failure may cause isolated Trop T elevation
Different assays have different cut points
Point of care tests are less sensitive than the laboratory assays
Case

- 49 yo male
- Palpitations.
  Dyspnoea and diaphoretic after swimming laps
- ‘Anxiety attacks’ in past
- P 160, clinically AF
- Routine ‘cardiac’ bloods taken
He is settling nicely but...

His troponin comes back elevated, cTnT 0.08 (normal <0.03 ng/mL)

Doh!!

Can you ignore this result?
Troponin and arrhythmias

- Modest elevations of troponin may occur during SVTs and paroxysmal AF
- This phenomena is not ischaemic

If it is a ‘simple’ arrhythmia, don’t order a troponin.
Suppose you electrically cardiovert him. Six hour later he comes back with some diffuse chest soreness. The nurse orders a troponin – it is modestly elevated.

- This result may reflect the initial arrhythmia, or be due to the cardioversion.
- ICD shocks can also cause trop rises
Case

- 38 yo female
- Three days of crushing central chest pain and dyspnoea
- ECG follows
- cTnT 3.25 (normal <0.03)
Normal Sinus Rhythm, Rate 94

IVCD, Consider Atypical LBBB

ORS: 120 m/s, Axis +180°, R, I aVL, V5, V6

---Axis---

P: 7°
ORS: -59°
T: 89°

Arterial blood gases normal.

Unclear clinical diagnosis.
Clearly cannot ignore this

- Angio normal
- Echo – global dysfunction, EF ~ 27%
- → Myocarditis
- T/F to tertiary centre
- Subsequently full recovery
Myocarditis

- Occasional cause of heart failure, arrhythmia and SCD
- Subclinical forms probably common
- Troponin elevation not universal, in part due to presentation well after initial insult
- Diagnosis difficult
Case

- 40 yo woman
- On antibiotics for a chest infection, now substernal chest pain for 6 hrs.
- Diet controlled diabetic
- No rub
- ECG follows
Rate 101
PR 120
QRS 65
QT 288
QTC 373

AGE NOT ENTERED, ASSUMED TO BE 50 YEARS FOR PURPOSE OF ECG INTERPRETATION
LEAD(S) NOT USED FOR MORPHOLOGY ANALYSIS
SINUS TACHYCARDIA, RATE 101
BORDERLINE RIGHT AXIS DEVIATION
ST ELEVATION, PROBABLE NORMAL EARLY REPOL PATTERN

---Axis---
P 56
QRS 83
T 73

- BORDERLINE ECG -

Unconfirmed diagnosis.
• Troponin T 0.77 (normal <0.03)
She is thrombolysed without any apparent effect and subsequently transferred for rescue PCI.

Angio normal.

→ Pericarditis
Pericarditis and troponin

- Troponins frequently elevated ~50%
- Thus ‘new’ condition myopericarditis
- A troponin rise does not portend a worse prognosis or a complicated course
- Simple acute idiopathic pericarditis can be treated on an outpatient basis irrespective of troponin.
### Heart failure and troponin

<table>
<thead>
<tr>
<th>Condition</th>
<th>% trop raised</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe but stable HF</td>
<td>3%</td>
</tr>
<tr>
<td>Hospitalised HF</td>
<td>7%</td>
</tr>
<tr>
<td>Unstable HF</td>
<td>23%</td>
</tr>
<tr>
<td>APO</td>
<td>20-55%</td>
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</tbody>
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