A young woman with exertional chest pain
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Speaker's name: Dr Yasir Parviz, MBBS, MRCP

- I do not have any potential conflict of interest

- I have the following potential conflicts of interest to report:
Case: A young woman with chest pain

- Chief Complaint
  - Chest pain on effort
- Risk Factors
  - None
- Medical History
  - Hashimoto's thyroiditis
- Baseline Investigations
  - Electrocardiogram showed normal sinus rhythm, with no ischemic change at rest. Her chest X-ray and echocardiogram were almost normal
Stress Test (\(^{13}\text{N}-\text{ammonia PET}\))

**Rest**
- No symptoms, no ECG change,
- Normal myocardial perfusion
- Coronary flow: Normal
  - RCA: 0.70 (mL/min/g)
  - LCX: 0.98
  - LAD: 0.72

**Cold pressor test**
- No symptoms, no ECG change,
- Normal myocardial perfusion
- Coronary flow: Decreased in RCA
  - RCA: 0.58 (mL/min/g)
  - LCX: 0.98
  - LAD: 0.71
Aberrant origin of RCA from left coronary sinus
IVUS (rest)

Lumen area 7.6 mm$^2$

Lumen area 6.3 mm$^2$

MLA (rest) 4.7 mm$^2$
Dobutamine Stress Test

- Dobutamine
- \(~40 \mu g/kg/min\)

No response

Atropine 1 mg

CHEST PAIN INDUCED
(Heart rate 130 bpm)

\[
P_d/P_a: 0.99 \text{ (rest)} \Rightarrow 0.87 \text{ (on stress)}
\]

\[
iFR: 0.98 \text{ (rest)} \Rightarrow 0.92 \text{ (on stress)}
\]
IVUS (Dobutamine 40 µg/kg/min + Atropine 1 mg)

(on stress)

Lumen area 6.6 mm²

Lumen area 4.5 mm²

Lumen area 2.9 mm²
Diagnosis

• Anomalous aortic origin of the RCA (interaortic type) that arose from the left coronary sinus.

• iFR/IVUS measurement under dobutamine stress test was useful to reveal latent ischemia.

• Surgical treatment, the so-called “unroofing” procedure, improved the patient’s symptoms.
Surgical Operation for AAORCA

Unroofing anomalous right coronary artery origin

Individuals with anomalous aortic origin of a coronary artery and symptoms of ischemic chest pain should be offered surgery to prevent sudden cardiac death. (Class I; Level of evidence B)
THANK YOU FOR YOUR ATTENTION

ANY QUESTIONS?
Case Summary

✓ 40 y.o. woman with chest pain on effort was diagnosed with anomalous aortic origin of the RCA (interaortic type) that arose from the left coronary sinus.

✓ iFR measurement under dobutamine stress test was useful to reveal latent ischemia.

✓ Surgical treatment, the so-called “unroofing” procedure, improved the patient’s symptoms.
## Autopsy Studies of SCD in AAOCA

<table>
<thead>
<tr>
<th>First Author, Year</th>
<th>Anomalous RCA</th>
<th>Anomalous LCA</th>
<th>Mean Age (y.o.)</th>
<th>Deaths during Exercise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cheitlin, 1974*¹</td>
<td>0% (0/18)</td>
<td>17% (9/33)</td>
<td>20 ± 6.8</td>
<td>78%</td>
</tr>
<tr>
<td>Kragel, 1992*²</td>
<td>32% (8/25)</td>
<td>71% (5/7)</td>
<td>25 ± 11</td>
<td>-</td>
</tr>
<tr>
<td>Taylor, 1992*³</td>
<td>-</td>
<td>82% (23/28)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Taylor, 1997*⁴</td>
<td>19% (4/21)</td>
<td>89% (8/9)</td>
<td>22 ± 12</td>
<td>83%</td>
</tr>
<tr>
<td>Frescura, 1998*⁵</td>
<td>57% (4/7)</td>
<td>100% (4/4)</td>
<td>20 ± 15</td>
<td>75%</td>
</tr>
</tbody>
</table>

*¹ Circulation 1974;50:780-7  
*² Am J Cardiol 1988;62:771-7  
*³ J Am Coll Cardiol 1992;20:640-7  
*⁴ Am Heart J 1997;133:428-35  
*⁵ Hum Pathol 1998;29:689-95