Is

#Sports Cardiology a real thing?

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A/Prof André La Gerche
Head, Sports Cardiology & Cardiac Magnetic Resonance Imaging
Baker Heart and Diabetes Institute

NHMRC Career Development and NHF Future Leadership Fellow
Cardiologist, The Alfred and St Vincent’s Hospitals
Visiting Professor, University of Leuven, Belgium
andre.lagerche@baker.edu.au
Sports Cardiology is a bona fide sub-specialty

- Case-based illustration
- Unique presentations and management decisions
- Not part of educational syllabus and literature full of misnomers
- Specialised assessment techniques
“Too fit to have heart problems”

- 68 yo Ironman athlete with progressive fatigue and breathlessness for 4 years
“Too fit to have heart problems”

- 40 yo nationally ranked female marathon runner
- Multiple episodes of pre/syncope, 3 months exertional fatigue
- T-wave inversion precordial leads
- Stress echo: “RV mildly dilated and hypokinetic BUT superb exercise capacity and good cardiac augmentation” ....reassured
- 3 weeks later arrested during 10km race
“Too fit to have heart problems”
- elite female marathoner
“Too fit to have heart problems”
- elite female marathoner
Conclusion

Don’t base your conclusions on exercise capacity alone
A professional cyclist presenting for screening

- 23 yo Caucasian male
- Competitive cyclist since age 12 (pro at 17)
- No cardiac symptoms or other medical illness
- No family history of SCD or unexplained collapse
Screening ECG
Left Ventricle

Cyclist

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>ASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>LVEDD</td>
<td>70mm</td>
<td>≥ 69mm</td>
</tr>
<tr>
<td>(LVEDD/BSA)</td>
<td>(41)</td>
<td>(≥ 37)</td>
</tr>
<tr>
<td>LVEDV</td>
<td>308 ml</td>
<td>≥ 201</td>
</tr>
<tr>
<td>(LVEDD/BSA)</td>
<td>(176)</td>
<td>(≥ 97)</td>
</tr>
<tr>
<td>LV septum</td>
<td>12 mm</td>
<td>mildly abnormal</td>
</tr>
<tr>
<td>LV mass</td>
<td>380 gm</td>
<td>&gt; 255 gm</td>
</tr>
<tr>
<td>(LV mass/BSA)</td>
<td>(220)</td>
<td>(&gt; 131)</td>
</tr>
<tr>
<td>EF %</td>
<td>52%</td>
<td>mildly abnormal</td>
</tr>
</tbody>
</table>
Massive hearts in cyclists

Abergel et al. JACC 2004
Atria

**Cyclist**

- **LA area**: 36 cm² (moderately abnormal)
- **RA area**: 42 cm²
- **LA transverse**: 52 mm
- **RA transverse**: 58 mm

**ASE severely abnormal**

- **LA area**: > 40 cm²
- **RA area**: > 40 cm²
- **LA transverse**: ≥ 52 mm
- **RA transverse**: ≥ 55 mm
Right Ventricle

Cyclist

ASE severely abnormal

RV EDV
348 ml
101 ml

RV ESV
188 ml
56 ml

RV EF
46%
(mildly abnormal)

> 50%
Summary

• 23 yo elite athlete, completely well

• ECG extreme bradycardia

• Massive heart
DGE will sort it out...not

Focal DGE observed in 5/39 *healthy* athletes (12.8%)

La Gerche, Heidbuchel, Prior et al. Eur Heart J 2012
Accurate exercise pressure / volumes

real-time, free-breathing, flat out

La Gerche, Claessen, Claus, Heidbuchel et al. Circ Imaging 2012
Familial DCM vs. athletes

Claessen, La Gerche et al. *unpublished*
?ARVC

- 21 yo female rower at national championships
- Asymptomatic screening
- No family history
CMR
Change in wall stress with exercise

Sub-clinical RV cardiomyopathy?

La Gerche, Claessen, Heidbuchel et al. *Eur Heart J* 2015
Female marathon runner

- 43 year old female
- Endurance athlete for many years (3rd Melbourne marathon 10 years ago)
- Presented with atypical chest pain
- cTnI = 64
- Abnormal ECG
- Negative ischaemia testing (thallium scan)
Echo - left ventricular hypertrophy
Echo – cavity obliteration
Rest and stress LV filling

REST
E/e’ = 4
mitral E wave 0.8m/s
septal e’ 10.8cm/s
lateral e’ 11.7cm/s

STRESS
E/e’ = 8
mitral E wave 1.25m/s
septal e’ 14cm/s
lateral e’ 17cm/s
Cardiopulmonary exercise test

$\text{VO}_2 \text{ max of } 42.5 \text{ mls/kg/min}$

RER 1.18

HR 172 bpm
Competitive Sport Participation Among Athletes With Heart Disease
A Call for a Paradigm Shift in Decision Making

Aaron L. Baggish, Michael J. Ackerman, Rachel Lampert
Summary

• Unique problems

• Specialised assessment tools

• Accumulated knowledge