Long-term cardiac function after peripartum cardiomyopathy and preeclampsia

A Danish nationwide, clinical follow-up study using maximal exercise testing and cardiac magnetic resonance imaging

Anne Ersbøll
MD, PhD student
Center for Pregnancy and Heart Disease
Copenhagen University Hospital Rigshospitalet
Background

• Few clinical studies of long-term outcome after peripartum cardiomyopathy (PPCM)

• Relation with preeclampsia (PE)?

• Aim:
  • To measure the long-term effect of PPCM on cardiac function and investigate the association with PE
Method

• Three study groups invited:
  • Nationwide PPCM cohort 2005 – 2014 (PPCM-group)
  • Previous severe preeclampsia (PE-group)
  • Previous uncomplicated pregnancy (UCP-group)
Method

• Maximal exercise testing
  • Peak VO₂

• Cardiac magnetic resonance imaging
  • Systolic function
  • Diastolic function
  • Late gadolinium enhancement
Results

• Participants n=84:

  • PPCM-group
    • 58 invited → 28 accepted (48%)
    • No differences between participants and decliners

  • PE-group
    • 28 women matched on age and year of index delivery

  • UCP-group
    • 28 women matched on age and year of index delivery
Results

• Median time to follow-up: 7.5 years (range 2 – 11 years)

• BMI:
  • PPCM-group: 30 kg/m²
  • PE-group: 23 kg/m²
  • UCP-group: 23 kg/m²

• PPCM-group
  • NYHA class I: 24 women (86%)
  • Heart failure medication: 13 women (46%)
Results  Exercise testing

Mean peak oxygen consumption (p<0.0001)

<table>
<thead>
<tr>
<th>Condition</th>
<th>Ml/kg/minute</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peripartum cardiomyopathy</td>
<td>29.6 (7.2)</td>
</tr>
<tr>
<td>Preeclampsia</td>
<td>43.2 (11.1)</td>
</tr>
<tr>
<td>Uncomplicated pregnancy</td>
<td>45.4 (10.2)</td>
</tr>
</tbody>
</table>
## Results

Cardiac magnetic resonance imaging

<table>
<thead>
<tr>
<th></th>
<th>PPCM-group</th>
<th>PE-group</th>
<th>UCP-group</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LVEF, %</strong></td>
<td>62</td>
<td>67</td>
<td></td>
<td>&lt; 0.0001</td>
</tr>
<tr>
<td><strong>LVEDV, ml/m²</strong></td>
<td>231</td>
<td>25</td>
<td>27</td>
<td>0.008</td>
</tr>
<tr>
<td><strong>Diastolic function</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>LVPFR, ml/s/m²</strong></td>
<td>229</td>
<td></td>
<td>265</td>
<td>0.005</td>
</tr>
<tr>
<td><strong>LAPEV, ml/m²</strong></td>
<td>13</td>
<td>19</td>
<td>20</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>

LGE: 1 woman
Results

• Predictors of peak VO$_2$:
  • Diastolic function: LAPEV ($p = 0.012$)
  • BMI ($p < 0.0001$)
  • Adjusted for daily use of beta-blocker and time spent on exercise

• 15 women in PPCM-group with concomitant hypertensive disorder of pregnancy:
  • Higher blood pressure at follow-up
  • No significant differences in peak VO$_2$, systolic or diastolic cardiac function
Conclusion

• Seven years after PPCM:
  • Most women recovered LVEF
  • Diastolic dysfunction
  • Reduced exercise capacity
  • Higher blood pressure in women with concomitant HDP, but no other differences

• Thank you