Subsequent reproductive outcome among women with peripartum cardiomyopathy: a nationwide study

Maria Gulbrandsen Hauge¹
Marianne Johansen ¹
Niels Vejlstrup ²
Finn Gustafsson ²
Peter Damm ¹
Anne S. Ersbøll ¹

Center for Pregnancy and Heart Disease
¹ Department of Obstetrics and Department of Cardiology
Copenhagen University Hospital Rigshospitalet
Denmark
Declaration of interests - none
Peripartum cardiomyopathy (PPCM)

- Definition
  - “Idiopathic cardiomyopathy presenting with heart failure secondary to left ventricular systolic dysfunction towards the end of pregnancy or in the months following delivery
  - No other cause of heart failure is found
  - Diagnosis of exclusion
  - Left ventricular ejection fraction (LVEF) is nearly always < 45 % (normal ≥ 55%)”
  
  Sliwa et al. Eur J Heart Failure, 2010

- Incidence varies globally
  - Haiti: 1:300
  - South Africa: 1:1000
  - USA: 1:968 to 1:4350
  - Denmark: 1:10,149
  - Japan: 1:20,000 deliveries
Peripartum cardiomyopathy

- Prognosis
  - 47-72% recover left ventricular function within 6-12 months
  - 13-15% major adverse events (MAE)
    - Heart transplantation: 1-7%
    - Mechanical circulatory support: 1-8%
    - Persistent severe heart failure: 5-15%
    - Mortality: 2-4%

Haghikia et al. Basic Res. Cardiol., 2013
McNamara et al. JACC 2015
Ersbøll et al. submitted
Subsequent pregnancies

<table>
<thead>
<tr>
<th>Pre-pregnancy LVEF</th>
<th>Risk of relapse of heart failure (%)</th>
<th>Mortality (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥ 55 %</td>
<td>17-21 %</td>
<td>0 %</td>
</tr>
<tr>
<td>≤ 55 %</td>
<td>44-46 %</td>
<td>2-19 %</td>
</tr>
</tbody>
</table>

Elkayam et al. NEJM, 2001
Subsequent pregnancies

- No clear guidelines regarding subsequent pregnancies
- Women with PPCM are often advised against a new pregnancy
- Few European studies

**Aim:** to describe subsequent reproductive outcome in a Danish population-based cohort during 2005-2014
Methods

2005-2014: Nationwide Danish registries ICD-10 diagnoses related to pregnancy:
- PPCM: O90.3
- Cardiomyopathy: I42 and I43
- Heart failure: I50 and 075.

Chart review and validation of 61 cases of PPCM in 61 women

Ersbøll et al. submitted
Methods

New search in nationwide registries for subsequent ICD-10 diagnoses:
- Liveborns: O80-O84
- Abortions: 000-008
- Sterilizations: KLG022

Chart review and data collection
Results

- 13 / 61 women (21%) had a total of 16 subsequent pregnancies
  - 1 miscarriage
  - 1 ectopic pregnancy
  - 7 terminations
  - 7 live-born babies
Subsequent pregnancies resulting in a live-born baby (n=7)

- Baseline characteristics before subsequent pregnancy
  - 6 had normalized LVEF
  - 2 women were on oral β-blockers
  - 2 had been advised against a new pregnancy
Subsequent pregnancies resulting in a live-born baby (n=7)

- Neonatal outcome
  - 7 born at term
    - Mean gestational age 269 days, (range 259-276)
  - 7 healthy babies
    - APGAR 5 score ≥ 9
    - Mean birth weight 3488 g (range 2650-4220 g)

- Maternal outcome
  - 5 planned caesarian sections
    - 3 maternal requests
    - 2 obstetric indications
  - 2 vaginal deliveries
  - 1 had a short episode of self-limiting tachyarrhythmia
  - None had relapse of heart failure during pregnancy
  - 1 had asymptomatic decrease in LVEF 7 weeks postpartum
LVEF before, during and after the subsequent pregnancy

![Graph showing LVEF percentage over weeks during pregnancy and postpartum.]
Conclusion

- 11% of women with PPCM had a subsequent pregnancy resulting in a live-born child
  - 14% relapse of heart failure
  - 0% mortality
- Relapse can occur in a new pregnancy, even though LVEF has normalized
- Need for more data, metaanalyses and establishment of clinical guidelines
Terminations

- 7 terminations in 6 women
- Mean gestational age at termination: 47 days (range 43-51)
- No cardiac complications
- 5 had been advised against a subsequent pregnancy after the PPCM diagnosis
- No significant difference in clinical characteristics compared with the women who gave birth to a liveborn baby (→ differences in counseling?)

Sterilizations

- 4 women
- 3 were due to advice against a new pregnancy after the PPCM diagnosis
LVEF before, during and after the subsequent pregnancy

Gestational weeks and number of weeks after delivery

* LVEF before subsequent pregnancy
** Number of weeks after delivery