

Peripartum cardiomyopathy and heart failure in the young

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This thesis is based on the following studies, referred to in the text by their Roman numerals.

- I Barasa A, Schaufelberger M, Lappas G, Swedberg K, Dellborg M, Rosengren A. Heart failure in young adults: 20-year trends in hospitalization, aetiology, and case fatality in Sweden.
Eur Heart J. 2014 Jan;35(1):25-32.
- II Barasa A, Rosengren A, Zverkova Sandström T, Ladfors L, Schaufelberger M. Peripartum cardiomyopathy and pregnancy-associated heart failure: incidence and long-term mortality in Sweden 1987–2010.
Submitted
- III Barasa A, Goloskokova V, Ladfors L, Patel H, Schaufelberger M. Symptomatic recovery in a clinical cohort with peripartum cardiomyopathy.
Submitted
- IV Barasa A, Schaufelberger M, Nyberg G, Basic C, Johansson M. Increased arterial stiffness and persisting altered left ventricular structure and function in peripartum cardiomyopathy.
Manuscript



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PERIPARTUM CARDIOMYOPATHY AND HEART FAILURE IN THE YOUNG

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Abstract

Aim: The overall aim of this thesis was to determine comorbidity, incidence and mortality in heart failure (HF) in young adults and particularly in peripartum cardiomyopathy (PPCM). More specific objectives in PPCM patients were to describe the role of concomitant preeclampsia, prognostic factors of symptomatic and left ventricular recovery. Finally we also wanted to assess left ventricular and arterial compliance in PPCM patients.

Methods: In paper I we linked mortality data from the Cause-specific Death Register and discharge diagnoses from the Inpatient Register. In paper II we further linked these two registries with the Medical Birth Register. In paper III we reviewed a clinical cohort with PPCM and compared prognostic factors associated with early and late symptomatic recovery. In paper IV consecutive PPCM patients were compared with healthy controls with respect to left ventricular contractile reserve, diastolic function and arterial stiffness.

Results: Paper I: From 1987 to 2006, there were 443 995 HF hospitalisations among adults 18–84 years in Sweden. Of these, 3.0% occurred in people aged 18–54 years. An almost 50% increase among people aged 18–44 years was seen in contrast to people ≥ 45 years where incidence peaked in the mid-1990s. Case fatality decreased for all age groups, but only up until 2001. Paper II: Countrywide 272 PPCM cases and 1341 controls were identified. Mean incidence was 1 in 9191 deliveries. PPCM cases had higher BMI (OR) 1.05, were more likely to be of non-OECD country origin OR 1.61, have multifetal births OR 2.26 and have a higher prevalence of preeclampsia OR 13.02. From 1987-2006, 8.1% of cases and 0.4% of controls had died. Preeclampsia was inversely associated with mortality. Paper III: 24 cases of PPCM were identified. Mean (SD) LVEF at diagnosis was 34.7% (10.7). All patients received β -blockers and ACE-I/ARB. Review was performed at 4.8 (2.8) years. Late/non-recovery vs. early recovery was associated with larger LV size at diagnosis, $P=0.02$. Preeclamptic PPCM cases (58.3%), recovered earlier, $P=0.001$. Paper IV: 22 PPCM cases and 15 controls, underwent review 3 years after diagnosis, including 2-D echo and arterial stiffness assessment at rest and immediately post-exercise. Blood pressure was higher among cases (122/76) than controls (111/67), $P=0.01$. NT-proBNP was elevated in all cases. Increased LV and arterial stiffness was seen in cases compared with controls.

Conclusions: We showed that the incidence of HF among adults <55 years increased while mortality decreased between 1987 and 2006. PPCM incidence during the period was 1 in 9200 deliveries, which is lower than most other studies. Mortality at the end of the study period was >20 higher in cases than controls. Preeclampsia was strongly associated with PPCM, but inversely associated with mortality. Likewise paper III and IV revealed that large LV size and the absence of concomitant preeclampsia was linked to worse prognosis. LV and arterial compliance remains reduced 2.7 years after diagnosis. Longer follow-up of PPCM patients should be pursued with specific attention to diastolic function and reduced arterial compliance. Hence the notion of complete PPCM recovery, may need revision.

Key words: Heart failure, Young adults, Epidemiology, Cardiomyopathy, Peripartum, Pregnancy, Preeclampsia, Prognosis, Incidence, Echocardiography, Vascular age