

Aspects of heart failure development and prevention in women

Akademisk avhandling

som för avläggande av medicine doktorsexamen vid Sahlgrenska akademien, Göteborgs universitet kommer att offentligen försvaras i lokal 2403, Gösta Sandells sal, Medicinargatan 9B, fredagen den 5 juni 2020, klockan 13:00

av Anna-Karin Halldin

Fakultetsopponent:
Professor Anders Halling,
Lunds universitet, Malmö, Sverige.

Avhandlingen baseras på följande delarbeten

- I. ***Obesity in Middle Age Increases Risk of Later Heart Failure in Women - Results From the Prospective Population Study of Women and H70 Studies in Gothenburg, Sweden.***
Halldin A-K, Schaufelberger M, Lernfelt B, Björk L, Rosengren A, Lissner L, Björkelund C.
J Card Fail. 2017;23(5):363-369
- II. ***Impact of changes in physical activity or BMI on the risk of heart failure in women - the prospective population study of women in Gothenburg.***
Halldin A-K, Lernfelt B, Lissner L, Björkelund C.
Scand J Prim Health Care. 2020; 38(1): 56-65.
- III. ***Cholesterol and triglyceride levels in midlife and risk of heart failure in women, a longitudinal study - the Prospective Population Study of Women in Gothenburg.***
Halldin A-K, Lissner L, Lernfelt B, Björkelund C.
Submitted to BMJ Open 28 Dec 2019.
- IV. ***Secular trends in cardiovascular risk factors with particular regard to heart failure in 38- and 50-year-old women - The Prospective Population Study of Women in Gothenburg.***
Halldin A-K, Lissner L, Hange D, Lernfelt B, Björkelund C.
In Manuscript.

**SAHLGRENSKA AKADEMIN
INSTITUTIONEN FÖR MEDICIN**



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Heart failure (HF) is a severe progressive condition. Women more often are older and suffer from heart failure with preserved ejection fraction (HFpEF), contrasting to men who more often are younger and suffer from heart failure with reduced ejection fraction (HFrEF). As most previous research has been conducted on male HF patients and in hospital settings, the results may not be fully applicable for care of women with HF in the primary care context.

Aim: The overall aim of the thesis was to investigate aspects of risk factors for the development of heart failure in women.

Methods: Two population studies conducted in Gothenburg Sweden, “The Prospective Population Studies of Women” (Papers I, II, III, IV) and “The Gerontological and Geriatric Population Studies in Gothenburg” (Paper I) were used. Women were followed from 1968 to 2016. Paper I prospectively studied the impact of obesity/overweight on the risk of developing HF in women of different ages. Paper II investigated prospectively whether a change in the level of physical activity or Body Mass Index (BMI) had any impact on risk of developing HF in women. In paper III impact of triglyceride and cholesterol levels on the future risk of HF development was studied in 50-year-old women. Paper IV studied secular trends in important cardiovascular risk factors for HF in five representative cohorts of 38 and 50-year-old women over a period of 48 years.

Results: Obesity in young and middle ages proved to be a risk factor for later HF, but not so for older women. Being physically active in both younger and older ages protected against development of HF. Increased level of physical activity in older ages was protective. Increased triglyceride levels in 50-year-old women was associated with the development of later HF. Secular trends show that most risk factors for HF in women decreased in later born cohorts, but BMI, mental stress and frequency of depressive symptoms increased in some of the cohorts.

Conclusion: A healthy lifestyle is of great importance to reduce the risk of developing HF in women. Different preventive measurements have different impact on HF development in women of different ages. Primary prevention is especially important since there is a lack of medical treatment proven effective for the heart failure phenotype most prevalent in women.

Keywords: Women, heart failure, obesity, physical activity, population study, risk factor, prevention, mental stress, serum triglycerides, serum cholesterol.

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