IMPACT OF RISK FACTORS AND TREATMENT IN CORONARY HEART DISEASE

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Abstract:

Aims: The aim of the present study was to explore how risk factors and medication influence clinical presentation and mortality in coronary heart disease (CHD) and to explain how much of the decrease in CHD mortality in Sweden that could be attributed to medical and surgical treatments, and how much to changes in cardiovascular risk factors.

Subjects and methods: We included 781 consecutive patients with a first acute myocardial infarction (AMI) during the period 1994 to 2002, to investigate trends in the use of lipid-lowering treatment, and changes in serum lipids. The second part of the study is based on 93,416 consecutive patients aged 25 to 84 years from RIKS-HIA, a national quality of care register that includes all patients admitted to CCUs in Sweden and admitted to hospital between 1996 and 2004 with a first AMI. The IMPACT mortality model was used to combine and analyze data on uptake and effectiveness of cardiological treatments and risk factor trends in Sweden, to investigate the relative contributions of these factors on the decline in CHD mortality in Sweden. The main data sources were official statistics, national quality of care registers, published trials and meta-analyses and national population surveys.

Results: In the single-centre study almost all patients under 65 years of age with a first AMI were treated with lipid-lowering drugs in 2002. Still, target levels for serum cholesterol were not met in a substantial number of patients. In the RIKS-HIA population, more than 50% of younger patients presenting with STEMI were smokers at the time of hospitalization. After adjustments, smoking was found to be an independent determinant for presenting with STEMI compared to non-STEMI. In addition, use of aspirin, β-blocker, ACE-inhibitor and statin prior to hospitalization were all associated with lower odds of presenting with STEMI compared to non-STEMI in both men and women. Between 1986 and 2002, CHD mortality rates in Sweden decreased by 53.4% in men and 52.0% in women aged 25 to 84 years. This resulted in 13,180 fewer deaths in 2002. By using the IMPACT model approximately 36% of this decrease could be attributed to treatments in individuals and 55% to population risk factor reductions. Adverse trends were seen for diabetes and overweight.

Conclusions: Despite a marked increase in lipid-lowering drug treatment, current target levels of <4.5 mmol/l for serum cholesterol are not met in a significant proportion of post-AMI patients. Tobacco smoking is a major determinant for presenting with STEMI, indicating that smoking is one of the major risk factors for presenting with more severe AMIs. Previous medication with aspirin, β-blocker, ACE inhibitor or statin is associated with substantially lower risk of presenting with STEMI. More than half of the CHD mortality decrease between 1986 and 2002 was attributable to reductions in major risk factors, mainly a large decrease in serum cholesterol, emphasizing the value of a comprehensive strategy that promotes primary prevention and evidence-based medical treatments, especially secondary prevention.

Key words: coronary disease, myocardial infarction, risk factors, smoking, lipid levels.

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This thesis is based on the following papers:

I.   Björck L, Welin C, Rosengren A. **Secular trends in lipid-lowering treatment and lipid levels after a first acute myocardial infarction.**
         J Vasc Health Risk Manag 2007;3:1045-51

II.   Björck L, Rosengren A, Wallentin L, Stenestrand U. **Smoking in relation to ST-segment elevation acute myocardial infarction: Findings from the Register of Information and Knowledge about Swedish Heart Intensive Care Admissions.**
         Submitted

III.   Björck L, Wallentin L, Stenestrand U, Rosengren A. **Medication and the risk of presenting with ST-elevation myocardial infarction - findings from the Register of Information and Knowledge about Swedish Heart Intensive Care Admissions.**
         In manuscript

IV.   Björck L, Rosengren A, Bennett K, Lappas G, Capewell S. **Modelling the Decreasing Coronary Heart Disease Mortality in Sweden between 1996 and 2002.**
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