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Lower long term relative survival and higher excess mortality in women and in elderly after acute myocardial infarction: a national cohort study using 180,368 cases from the SWEDEHEART registry

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Background: The majority of large scale studies of long-term survival for acute myocardial infarction (AMI) use all-cause mortality as their clinical outcome. However, such data also include the risk of death from causes other than AMI. In the absence of reliable and accurate cause-specific death data for AMI, we aimed to study the long-term relative survival and excess mortality after AMI compared with that of the general population.

Methods: A population-based cohort of 180,368 cases were extracted from the Swedish Web-system for Enhancement and Development of Evidence-based care in Heart disease Evaluated According to Recommended Therapies (SWEDEHEART) between 2003 and 2013. The relative survival and excess mortality were assessed for ST-elevation myocardial infarction (STEMI; n=60,712) and non-STEMI (NSTEMI; n=119,656) patients by comparing all-cause mortality data for the cohort with mortality data for an age, sex and year matched general population obtained from the Swedish Human Mortality Database. Relative survival and excess mortality rate ratios (EMRR) for age, sex and year were estimated using flexible parametric survival modelling.

Results: Over 821,173.671 person-years of follow-up, there were 70,902 (38.9%) deaths. Excess mortality increased significantly with age. Figure 1 shows the cumulative relative survival stratified by age, sex and year of diagnosis for STEMI and NSTEMI.

For STEMI, EMRRs were 2.18 (95% CI; 1.89–2.53) and 4.76 (95% CI; 4.05–5.60) for those aged 76–85 years and above 85 years respectively compared to the reference group 66–75 years, whereas EMRRs were 0.32 (95% CI; 0.25–0.41) for <55 years and 0.51 (95% CI; 0.42–0.62) respectively compared to the reference group.

Females had significantly worse survival compared with males for STEMI (EMRR=1.53, 95% CI; 1.26–1.87) and NSTEMI (EMRR=1.13, 95% CI; 1.08–1.18).

Compared with the early cohort (2003–05), excess mortality was significantly reduced in STEMI (2006–08 EMRRs 0.73, 95% CI 0.63–0.84; 2009–11 0.73, 0.64–0.84; 2012–13 0.74, 0.63–0.86) and NSTEMI (2006–08 EMRRs 0.76, 0.72–0.80; 2009–11 0.58, 0.54–0.62; 2012–2013 0.52, 0.46–0.57).

Conclusion: Survival following AMI improved over time, in particular for NSTEMI, after taking into account mortality rates in the general population. Furthermore, relative survival was higher in the younger cohorts and among males. However, older patients and females showed poorer survival even when accounting for their age, sex and year matched background population counterparts. Therefore, improved cardiovascular management should be addressed carefully to these groups.

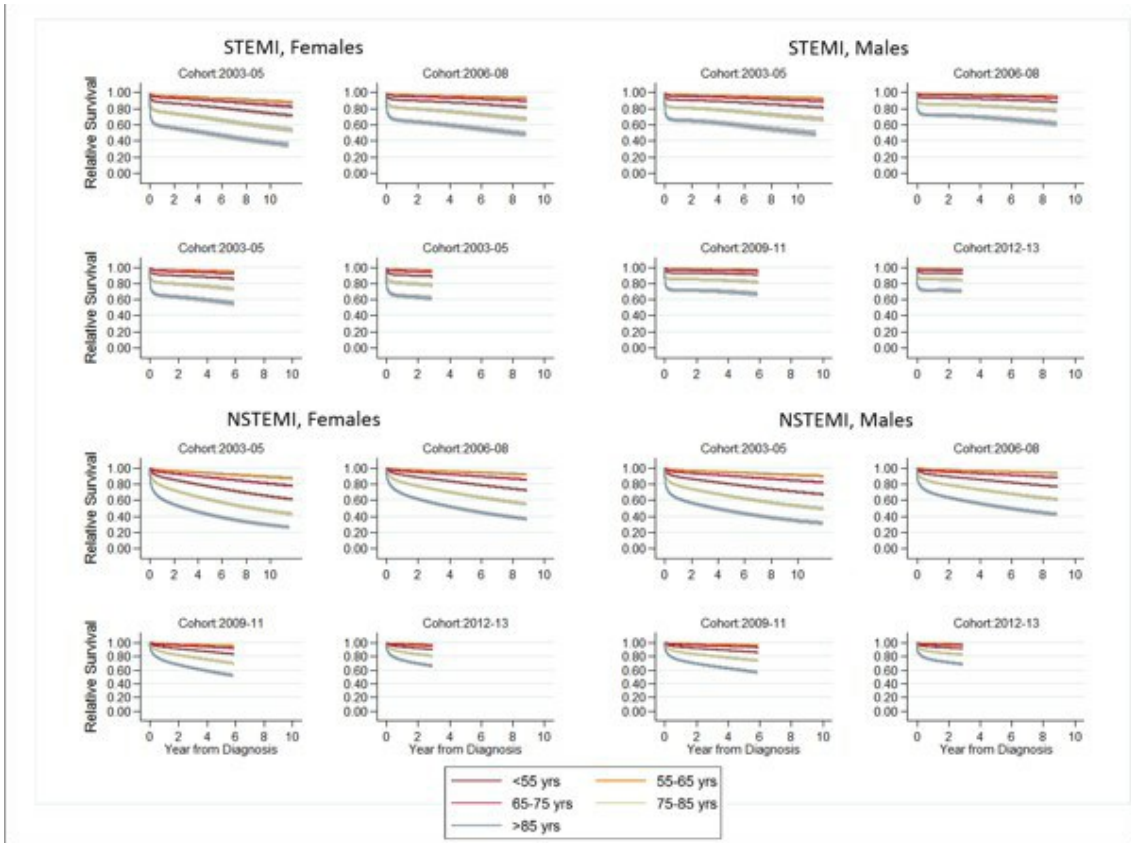


Figure 1