

Incidence of myocardial infarction, heart failure, and cardiovascular mortality in patients with peripheral artery disease: nationwide trends between 1997 and 2016

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Background: Over the past decades there has been a shift in cardiovascular (CV) risk factors with improved outcomes. Updated trends in incidence of myocardial infarction (MI) and heart failure (HF) in peripheral artery disease (PAD) are warranted.

Purpose: We aimed to investigate trends in the incidence of MI, HF, and CV mortality in PAD patients during the past two decades.

Methods: Nationwide registers were used to identify all patients aged ≥ 18 years, with first-time diagnosis of PAD between 1997 and 2016. Age-standardized incidence rates per 1,000 person-years (IR) were calculated to estimate trends of MI, HF, and CV mortality. Furthermore, risk of MI, HF, and CV mortality was estimated by 1-year cumulative-incidence with death as competing risk.

Results: A total of 136,746 patients with first-time diagnosis of PAD were included. Mean age was 70.01 [IQR 61–77 years], and 53.05% of the identified patients were male. The 1-year cumulative-incidence of MI in patients with PAD were 1.88% for year 1997–2000, 2.12% for year 2001–2005, 1.59% for year 2006–2010, and 1.32% for year 2011–2016, respectively.

The 1-year cumulative-incidence of HF in patients with PAD were 1.71%, 1.48%, 1.25%, and 1.11% for the 1997–2000, 2001–2005, 2006–2010, and 2011–2016 year-groups, respectively. Furthermore the 1-year cumulative-incidence of CV mortality in patients with PAD were 12.0%, 9.41%, 8.75%, and 7.80% for the 1997–2000, 2001–2005, 2006–2010, and 2011–2016 year-groups, respectively. Likewise, the age-standardized incidence rates pr. 1,000 person-years showed increasing trends of MI up until 2002 with an estimated annual percent change (APC) of +0.6 (95% CI 3.3–16.1, p-value 0.2). After year 2002 the IR decreased significantly with an estimated APC of –5.0 (95% CI 3.7–6.3, $p < 0.0001$). The age-standardized IR for HF decreased with an estimated APC of –3.3 (95% CI 2.0–4.6, $p < 0.0001$), and similarly for CV death decreased by –3.5 (95% CI 3.0–4.0, $p < 0.0001$).

Conclusion: The incidence of MI and HF in patients with PAD has significantly decreased over time together with a subsequent decline in CV mortality. This may suggest that the improvements in preventive strategies aimed at reducing CV risk are effective and contributes to lower incidence of MI and HF and thereby improved mortality rates in the past two decades.