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Acute coronary syndrome and cardiac arrest in the elderly

Academisk avhandling
som för avläggande av medicine doktorsexamen
vid Sahlgrenska akademien, Göteborgs Universitet kommer att
offentligen försvaras i hörsal Arvid Carlsson
Medicinaregatan 3, Göteborg
Torsdagen den 28 maj 2015 kl. 13:00

av

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Avhandlingen baseras på följande delarbeten.

- I. Libungan B, Karlsson T, Hirlekar G, Albertsson P, Herlitz J, Ravn-Fischer A. Delay and inequality in treatment of the elderly with suspected acute coronary syndrome. *International Journal of Cardiology*. 2014;176(3):946-950.
- II. Libungan B, Karlsson T, Albertsson P, Herlitz J. Elderly patients with myocardial infarction selected for conservative or invasive treatment strategy. *Clinical interventions in aging*. 2015;10:321-327.
- III. Velders MA, James SK, Libungan B, et al. Prognosis of elderly patients with ST-elevation myocardial infarction treated with primary percutaneous coronary intervention in 2001 to 2011: A report from the Swedish Coronary Angiography and Angioplasty Registry (SCAAR) registry. *American Heart Journal*. 2014;167(5):666-673.
- IV. Libungan B, Hirlekar G, Albertsson P. Coronary angioplasty in octogenarians with emergent coronary syndromes: Study protocol for a randomized controlled trial. *Trials*. 2014;15(1).
- V. Libungan B, Lindqvist J, Strömsöe A, Nordberg P, Hollenberg J, Albertsson P, Herlitz J. Out-of-hospital cardiac arrest in the elderly: A large-scale population-based study. *Submitted*



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ABSTRACT

The elderly are currently the fastest growing segment of clinical practice but the quality and quantity of the underlying scientific evidence to guide treatment is limited.

In this thesis five different studies investigating different aspects of geriatric cardiac care are presented.

In Paper I, a study of age related differences in patients with symptoms suggestive of acute coronary syndrome showed that elderly patients (>80 years) were more likely to receive a final diagnosis of acute coronary syndrome (17% vs. 8%) but were less often investigated with coronary angiography (44% vs. 89%, $p < 0.0001$) or echocardiography than their younger counterparts. Elderly with ACS received less medical treatment with P2Y₁₂ antagonists and lipid lowering drugs. Regarding treatment delay: elderly with chest pain could not be shown to have a delay to hospital admission compared to their younger counterparts. Nevertheless, higher age was associated with a longer time to first ECG. These findings underscore the substantially more complex comorbidities and worse outcome among elderly patients who were less likely to receive evidence based treatment.

In Paper II, the differences between elderly (>75years) patients with myocardial infarction selected for invasive or conservative treatment strategy were investigated. Heart failure, both previous history and at presentation, turned out to be higher in the conservative group compared to the invasive group. There was lower mortality in the invasive group (in-hospital 9% vs. 20%, $p < 0.0003$) compared to the conservative group. Although it is tempting to attribute the apparently lower mortality rate to the invasive treatment strategy, such a causative assumption cannot be made due to the observational study design and risk for bias. That kind of conclusion must be confirmed by a randomized clinical trial. A protocol for such a study is discussed in Paper IV.

In Paper III, elderly (>80years) STEMI patients treated with PCI were investigated during a 10-year study period. During the study period average age and co-morbidity increased, and procedural success remained constant. In addition, risk, in terms of bleeding, re-infarction, heart failure and stroke remained similar. The prognosis of elderly PCI-treated STEMI patients during the study period turned out to be unchanged despite changes in treatment and more unfavorable baseline characteristics. Also, advanced age was associated with increased risk for adverse events.

In Paper V, elderly patients (>70 years) who suffered OHCA were stratified in 3 different age groups: 70-79, 80-89 and ≥ 90 years of age. With increasing age the 30-day survival decreased: 6.6%, 4.4% and 2.3% respectively. However, even in patients above 90 years of age, defined subsets with a survival rate of more than 10% exist. In survivors, age was not a key determinant for bad neurological outcome.

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ISBN: 978-91-628-9294-4