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Cardiac arrest with emphasis on comorbidity and choice of treatment in acute coronary syndrome in the elderly

Akademisk avhandling

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Geir Hirlekar

Fakultetsopponent:

Professor Jonas Oldgren

Uppsala Universitet, Uppsala

Avhandlingen baseras på följande delarbeten

I. Hirlekar G, Karlsson T, Aune S, Ravn-Fischer A, Albertsson P, Herlitz J, Libungan B. *Survival and neurological outcome in the elderly after in-hospital cardiac arrest.* Resuscitation. 2017. Sep;118:101-106.

II. Hirlekar G, Jonsson M, Karlsson T, Hollenberg J, Albertsson P, Herlitz J. *Comorbidity and survival in out-of-hospital cardiac arrest.* Resuscitation. 2018. Dec;133:118-123.

III. Hirlekar G, Jonsson M, Karlsson T, Bäck M, Raswhani A, Hollenberg J, Albertsson P, Herlitz J. *Comorbidity and bystander cardiopulmonary resuscitation in out-of-hospital cardiac arrest.* Heart. (E-pub 2020 Jan 23).

IV. Hirlekar G, Libungan B, Karlsson T, Bäck M, Herlitz J, Albertsson P. *Percutaneous coronary intervention in the very elderly with NSTE-ACS: the randomized 80+ study.* Submitted.

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Cardiac arrest with emphasis on comorbidity and choice of treatment in acute coronary syndrome in the elderly

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Background and aims: More data is required on survival and neurological outcome after in hospital cardiac arrest (IHCA) in the elderly. The influence of comorbidity is often neglected in cardiac arrest research, particularly after out-of hospital cardiac arrest (OHCA). The treatment strategy of non-ST elevation - acute coronary syndrome (NSTE-ACS) in very elderly patients is debatable. Thus, the aim of this thesis was to determine; 1) The 30-day survival of elderly patients after IHCA 2) The impact of comorbidity on 30-day survival after OHCA 3) Whether comorbidity impacts the effect of bystander cardio-pulmonary resuscitation (CPR) on 30-day survival after OHCA 4) The impact between two treatment strategies in the very elderly with NSTE-ACS.

Methods: Data from the Swedish registry of Cardiopulmonary Resuscitation (SRCR) was used for analysis; IHCA (I) and OHCA (II-III). Data from the National Patient Registry (NPR) was merged with the SRCR (II-III). Study IV was a randomized controlled trial in which patients aged ≥80 with NSTE-ACS were randomized to an invasive strategy or conservative strategy.

Results: In Study I, we found that 30-day survival decreased among the elderly with advancing age; however, among survivors, no significant association was found between age and a favorable neurological outcome. In Study II, we found that with increasing comorbidity, the likelihood of a 30-day survival after OHCA decreased. Study III, we showed that comorbidity had no marked influence on the association between bystander CPR and 30-day survival. In Study IV, we showed that at the 12-month follow up, there was no statistically significant difference between the invasive strategy group compared to the conservative strategy group in major adverse cardiac and cerebrovascular events (MACCE) in the very elderly patients with NSTE-ACS.

Conclusion: A decrease in survival among the elderly with advancing age but most elderly survivors from IHCA had a favorable neurological outcome. Increasing comorbidity was associated with a decreased chance of 30-day survival but comorbidity did not affect the association of bystander CPR with 30-day survival after OHCA. We did not find any significant difference in MACCE between the invasive and conservative group at the 12-month follow-up.

Keywords: cardiac arrest; elderly; comorbidity; NSTE-ACS

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