Lower rate of invasive revascularisation after coronary angiography, following acute coronary syndrome, the longer distance you live from an invasive centres

Hvelplund, Anders; Galatius, Søren; Madsen, Mette; Rasmussen, Jeppe Nørgaard; Rasmussen, Søren; Madsen, Jan Kyst; Abildstrøm, Steen Zabell

Publication date:
2009

Document version
Final published version

Citation for published version (APA):

Terms of use
This work is brought to you by the University of Southern Denmark through the SDU Research Portal. Unless otherwise specified it has been shared according to the terms for self-archiving. If no other license is stated, these terms apply:

• You may download this work for personal use only.
• You may not further distribute the material or use it for any profit-making activity or commercial gain
• You may freely distribute the URL identifying this open access version

If you believe that this document breaches copyright please contact us providing details and we will investigate your claim. Please direct all enquiries to puresupport@bib.sdu.dk

Download date: 26. Sep. 2019
Less chance of revascularisation after CAG following ACS if you live far from an invasive centre

Anders Hvelplundab, b, Søren Galaliusb, Mette Madsens, Jeppe N. Rasmussens, Søren Rasmussens, Jan Kyst Madsens, Steen Z. Abildstråmd, e

a National Institute of Public Health, Copenhagen, Denmark. b Dept. of Cardiology, Gentofte Hospital, Copenhagen, Denmark. c Department of Public Health, University of Copenhagen, Copenhagen, Denmark.

d Cardiovascular Research Unit, Department of Internal Medicine, Glostrup, Denmark. e Danish Heart Registry, www.dhreg.dk, Denmark

Purpose

We investigated if there was a difference in the rate of invasive revascularisation (PCI and CABG) after coronary angiography (CAG) following first acute coronary syndrome (ACS) depending on distance between place of residence and invasive centre.

Methods

Background: Denmark (population 5.5 million) has a universal health insurance coverage system and uniform national guidelines for the treatment of ACS. Invasive treatment of cardiac patients has been centralized to a few highly specialized units.

Figure 1. Hospitals admitting ACS patients and their locations in Denmark

- We identified, from the National Patient Registry, all patients hospitalized with ACS (both STEMl, non-STEMI and UAP) for the first time in 2005-2007. We included those patients examined with CAG. Patients were followed for 60 days.
- Information on distance from the patients place of residence to nearest invasive centre travelling on normal road was obtained from Statistics Denmark. Patients were grouped in tertiles according to distance from home to centre.
- From the Danish Heart Registry procedures (CAG, PCI and CABG) were identified.
- Information on comorbidity, medicine use, socioeconomic status and vital status was available on each patient.
- Cox proportional-hazard models were used to estimate the difference in the rate of revascularisation within 60 days of the admission adjusting for explanatory variables.

Results

We identified 24,910 patients with ACS (83.5% with myocardial infarction).
Of those patients 1/3 lived less than 21 kilometres from an invasive centre and 1/3 lived more than 64 kilometres away. We included the 18,236 patients who were examined with CAG. In all 13,964 (73%) were revascularised.
The cumulative incidence of revascularisation after two months was 79% for the third living closest to a centre vs 74% for those living furthest away.
Distance to invasive centre was associated with less invasive revascularisation after the event.
Even after adjusting for other known risk factors such as vessel disease, gender, age, income, education, admission year, previous revasc., comorbidty and medicine use, there was a highly significant hazard ratio of 0.80 (95% CI 0.73-0.85, p < 0.0001) of receiving revascularisation for the patients living far away in comparison to those living closest. CAG was performed at a tertiary centre in 68% among those living farthest away vs. 90% among those living closest to a centre.

Table 1

<table>
<thead>
<tr>
<th>Distance to invasive centre</th>
<th>ACS-population</th>
<th>Distance &lt; 21 km</th>
<th>21 km &lt; Distance &lt; 64 km</th>
<th>Distance &gt; 64 km</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cum. Inc. CAG in 1-5 yrs (95 CI)</td>
<td>76.7 (71.6-77.7)</td>
<td>74.9 (73.8-75.9)</td>
<td>68.3 (62.7-69.3)</td>
<td></td>
</tr>
<tr>
<td>Median age (yrs)</td>
<td>64</td>
<td>65</td>
<td>64</td>
<td></td>
</tr>
<tr>
<td>Male gender in %</td>
<td>67.1</td>
<td>67.4</td>
<td>69.4</td>
<td></td>
</tr>
<tr>
<td>Cum. Inc. revascularisation in 1-5 yrs (95 CI)</td>
<td>78.6 (77.4-79.9)</td>
<td>76.4 (75.5-77.7)</td>
<td>74.2 (73.0-75.5)</td>
<td></td>
</tr>
<tr>
<td>Significant stenosis on CAG in %</td>
<td>83.9</td>
<td>77.4</td>
<td>81.8</td>
<td></td>
</tr>
<tr>
<td>CAG performed in an invasive centre in %</td>
<td>89.9</td>
<td>85.6</td>
<td>61.9</td>
<td></td>
</tr>
</tbody>
</table>

Figure 2. Association between distance to an invasive centre and the chance of receiving revascularisation

Conclusion

Patients hospitalized with a first acute coronary syndrome and examined with CAG are receiving a less aggressive invasive treatment the further away they live from an invasive centre.

The project is supported by The Danish Heart Foundation. The research is performed within the DANAMICS® group.

* Danish National Acute Myocardial Infarction Cohort Study.