Contemporary Life Expectancy And Causes of Death After Repair Of Intact And Ruptured AAAs

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Disclosures

• Medtronic
• WL Gore
• Philips
• Endologix

Background

• Life expectancy and causes of death after elective AAA repair are not well characterized
• Population aging and improved secondary prevention may have modified the prognosis of these patients
• Conflicting data on survival expectancy beyond 30 days after successful repair of a ruptured AAA, by many considered to be quite poor

Purpose of the study

• To determine the contemporary prognosis of patients undergoing AAA repair
• To focus on possible differences between intact and ruptured AAAs
• To analyze risk factors for overall, cardiovascular, and cancer-related mortality
• To explore differences in prognosis after EVAR and OR

Methods

• Single-center retrospective cohort study
• Prospective database: all primary AAA repairs 2003-2011
• Survival status was derived from civil registry database
• Causes of death were obtained through the Dutch Central Bureau of Statistics grouped according to ICD-10

Methods

• Primary Endpoint
  • overall mortality

• Secondary endpoints
  • AAA-related mortality
  • Cardiovascular mortality
  • Cancer-related mortality
Results

- 619 patients, 12% female
- Mean age: 72 Y
- 25% ruptured AAA
- 63% EVAR

Risk factors for early mortality

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>Univariable</th>
<th>Multivariable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (y)</td>
<td>1.08 (1.04-1.12)</td>
<td>1.09 (1.04-1.15)</td>
</tr>
<tr>
<td>Female gender</td>
<td>0.93 (0.65-2.30)</td>
<td>1.01 (0.39-2.62)</td>
</tr>
<tr>
<td>Renal insufficiency</td>
<td>3.59 (2.06-6.04)</td>
<td>2.94 (1.38-6.83)</td>
</tr>
<tr>
<td>Anemia</td>
<td>5.94 (3.32-10.61)</td>
<td>1.66 (0.99-2.86)</td>
</tr>
<tr>
<td>Baseline AAA%</td>
<td>1.02 (1.01-1.04)</td>
<td>0.99 (0.95-1.01)</td>
</tr>
<tr>
<td>Rupture</td>
<td>13.79 (7.55-25.2)</td>
<td>10.63 (4.80-23.5)</td>
</tr>
<tr>
<td>General anesthesia</td>
<td>3.47 (1.86-6.82)</td>
<td>1.41 (0.47-4.50)</td>
</tr>
<tr>
<td>Open repair</td>
<td>4.68 (2.69-8.14)</td>
<td>3.59 (1.69-7.62)</td>
</tr>
</tbody>
</table>

Late overall mortality

- Intact AAA: 5%
- Ruptured AAA: 10%
- General Population: 6%

Late overall mortality >30 days

- Intact AAA: 5%
- Ruptured AAA: 10%
- General Population: 6%

AAA: Abdominal Aortic Aneurysm
Cancer: 20%
Cardiovascular: 30%
Others: 30%
Risk factors for overall late mortality

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>Overall Univariable HR (95% CI)</th>
<th>Overall Multivariable HR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>1.06 (1.05-1.12)</td>
<td>1.09 (1.05-1.13)</td>
</tr>
<tr>
<td>Female gender</td>
<td>0.95 (0.95-1.29)</td>
<td>0.96 (0.95-1.29)</td>
</tr>
<tr>
<td>Renal insufficiency</td>
<td>1.36 (1.19-2.15)</td>
<td>1.23 (0.98-1.72)</td>
</tr>
<tr>
<td>Anemia</td>
<td>1.74 (1.26-2.29)</td>
<td>1.42 (0.99-2.00)</td>
</tr>
<tr>
<td>CV history</td>
<td>1.59 (1.00-2.02)</td>
<td>1.65 (1.00-2.84)</td>
</tr>
<tr>
<td>Cancer history</td>
<td>1.75 (1.00-2.94)</td>
<td>1.75 (1.00-2.94)</td>
</tr>
<tr>
<td>Diabetes history</td>
<td>0.67 (0.54-0.81)</td>
<td>0.85 (0.52-1.39)</td>
</tr>
<tr>
<td>Rupture</td>
<td>1.24 (0.85-1.83)</td>
<td>1.25 (0.80-1.98)</td>
</tr>
<tr>
<td>EVAR</td>
<td>0.88 (0.65-1.22)</td>
<td>0.81 (0.57-1.15)</td>
</tr>
</tbody>
</table>

Late mortality

- No difference in cancer-related mortality between EVAR and Open Repair
- No difference in AAA-related mortality between EVAR and Open Repair (1.1%)

Discussion

- We found a lower proportion of cardiovascular deaths than reported in earlier studies, possibly due to evolution of secondary prevention
- Cancer-related mortality was high with no difference between EVAR and OR patients, suggesting cumulative radiation did not result in an increase in cancer (yet)
- AAA-related death was lower than reported before, with infection being the primary event

Conclusions

- Improved cardiovascular survival after AAA repair
- Malignancy assuming growing preponderance
- No benefit in survival or increased mortality for EVAR
- Elective and ruptured patients have similar prognosis after perioperative period has passed