Value of metformin and ticagrelor in inhibiting the growth of small AAAs
What is the long-term fate of 25-29 mm abdominal aortas: how many will become AAAs?

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I have no financial disclosures to make

New York State
20,000,000

Rochester City
200,000

Lack of therapy to slow AAA growth

The effect of ticagrelor on growth of small abdominal aortic aneurysms— a randomized controlled trial

<table>
<thead>
<tr>
<th>Measure</th>
<th>Ticagrelor</th>
<th>Placebo</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAA volume change (%)</td>
<td>8.5%</td>
<td>7.5%</td>
<td>0.205</td>
</tr>
<tr>
<td>AAA diameter change (mm)</td>
<td>1.4 mm</td>
<td>1.4 mm</td>
<td>0.113</td>
</tr>
<tr>
<td>Thrombus volume change (%)</td>
<td>10.0%</td>
<td>10.0%</td>
<td>0.590</td>
</tr>
</tbody>
</table>
**Effect of metformin on AAA formation and progression**

In 526 AAA patients, metformin was associated with:
- a reduced AAA growth (50%)
- reduced expression of 21 systemic pro-inflammatory cytokines (in blood)

In an angiotensin II induced AAA model in hyperlipidemic mice (ApoE-/-), metformin:
- suppressed formation of AAA
- suppressed progression of AAA by 50%
- normalized vascular function
- lowered total cholesterol
- normalized blood pressure
- reduced osteopontin and Mmp12 gene expression

**Conclusion**
- Platelet inhibitors do not slow AAA growth
- Metformin is the most promising drug candidate to date, and RCTs are on the way
  - 25-29 mm aortas has a high tendency to progress to AAA, with potential to become clinically relevant, and therefore should be offered follow-up
  - Potentially important target group for future growth inhibitory medical treatment
Commonly used cardiovascular drugs, such as statins, ACE inhibitors, and beta-blockers, do not slow AAA growth. A recent international survey among vascular surgeons and researchers identified the development of medical treatment to limit AAA growth as a top priority research area. [Presented at ESVS annual meeting 2016]

**Metformin: the new flavor of the month**

**MAAAGI-trial**

- Multi-center population-based open-label RCT with blinded outcome assessment
- Examine if up to 2g metformin daily slows AAA growth in patients with small AAAs who do not have diabetes
- Main outcomes: CT-assessed AAA growth and AAA events at 2 and 5 years
- 500 non-diabetic AAA patients from 6 Swedish sites
- Start recruiting in January 2020