Eight Simple Markers that Can Suggest the Presence of a Thoracic Aortic Aneurysm

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Top 20 causes of Death in the US

<table>
<thead>
<tr>
<th>No.</th>
<th>All Ages</th>
<th>Ages 65+</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Heart Disease</td>
<td>Heart Disease</td>
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<tr>
<td>2.</td>
<td>Malignant Neoplasms</td>
<td>Malignant Neoplasms</td>
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<tr>
<td>3.</td>
<td>Cerebrovascular Disease</td>
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<td>5.</td>
<td>Unintentional Injury</td>
<td>Alzheimer's Disease</td>
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<td>6.</td>
<td>Alzheimer's Disease</td>
<td>Diabetes Mellitus</td>
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<td>7.</td>
<td>Diabetes Mellitus</td>
<td>Influenza and Pneumonia</td>
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<td>8.</td>
<td>Influenza and Pneumonia</td>
<td>Nephritis</td>
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<tr>
<td>9.</td>
<td>Nephritis</td>
<td>Unintentional Injury</td>
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<tr>
<td>10.</td>
<td>Septicemia</td>
<td>Septicemia</td>
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<td>11.</td>
<td>Suicide</td>
<td>Hypertension</td>
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<td>12.</td>
<td>Liver Disease</td>
<td>Parkinson's Disease</td>
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<tr>
<td>13.</td>
<td>Hypertension</td>
<td>Pneumonitis</td>
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<tr>
<td>14.</td>
<td>Parkinson's Disease</td>
<td>Benign Neoplasms</td>
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<tr>
<td>15.</td>
<td>Homicide</td>
<td>Aortic Aneurysm</td>
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<tr>
<td>16.</td>
<td>Pneumonitis</td>
<td>Liver Disease</td>
</tr>
<tr>
<td>17.</td>
<td>Perinatal Period</td>
<td>Atherosclerosis</td>
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<tr>
<td>18.</td>
<td>Benign Neoplasms</td>
<td>Suicide</td>
</tr>
<tr>
<td>19.</td>
<td>Aortic Aneurysm</td>
<td>Anemias</td>
</tr>
<tr>
<td>20.</td>
<td>HIV</td>
<td>Gallbladder Disorders</td>
</tr>
</tbody>
</table>


ANEURYSMS in the aorta pose a silent, but potentially deadly threat to those who harbor them.


Must prevent this transition:

By TAA detection!

Genetic Nature of Thoracic Aortic Aneurysm – Syndromic

- Marfan syndrome
- Loeys-Dietz syndrome
- Ehlers-Danlos syndrome
- Turner syndrome

How do we identify asymptomatic aneurysms in the general population?

Explain about 5% of all aneurysms and dissections

Detectable by phenotype
**“Guilt By Association”**

1. Intracranial aneurysm
2. Bovine aortic arch
3. Abdominal aortic aneurysm
4. Simple Renal Cysts
5. Bicuspid aortic valve
6. Family history
7. Thumb-palm test
8. Temporal arteritis (and other autoimmune disorders)

**“Associates” of Thoracic Aortic Aneurysm**

1. Intracranial aneurysm
2. Bovine aortic arch
3. Abdominal aortic aneurysm
4. Simple Renal Cysts
5. Bicuspid aortic valve
6. Family history
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In patients with a thoracic aortic aneurysm, there is a 10% likelihood that they harbor an intracranial aneurysm.

Intracranial aneurysm

![Image of intracranial aneurysm](image)

**Likelihood of TAA in ICA aneurysm patient**

![Graph showing likelihood of TAA](image)

2. Bovine aortic arch

“Bovine arch” refers to group of congenital variants of human aortic arch vessels in which there is aberrant origin of the left common carotid artery.

- Common origin of innominate artery and left common carotid artery (most common)
- Left common carotid artery originates from innominate artery at distance from aorta (less common)

3. Abdominal aortic aneurysm

Female and Elderly Abdominal Aortic Aneurysm Patients More Commonly Have Concurrent Thoracic Aortic Aneurysm

- Background: In the USA, AAA and TAA are the 16th and 17th leading causes of death, respectively. Concurrent TAA/AAA is associated with increased mortality.
- Methods: Retrospective analysis of 19,004 thoracic and 6,594 abdominal aortic aneurysms from the Vascular Registry.
- Results: 3.5% of AAA patients had a concurrent descending TAA (AAA/TAA). AAA/TAA patients were older than AAA patients (76 vs. 73 years). Men were more commonly affected in the AAA/TAA group (59% vs. 41%, P = 0.001). In the univariate logistic regression model, female gender (OR 1.3, 95% CI 1.0-1.6), hypertension (OR 1.8, 95% CI 1.1-2.6), and age (70-79 years: OR 2.4, 95% CI 1.3-4.6, 80-89 years: OR 3.0, 95% CI 1.4-6.0) were associated with concurrent TAA. In the multivariable model, only female gender and age were associated with TAA.

4. Simple Renal Cysts

Other Arch Anomalies

- Normal Arch
- Bovine Arch
- Isolated Vertebal
- Aberrant Right Subclavian
Simple Renal Cysts

5. Bicuspid aortic valve

- Likelihood of Aortic Dissection – 5%
- Concurrent Aortic Aneurysm – Common

6. Family History

- Thoracic Aortic Aneurysm is a Genetic Disease
- 21% of patients have a family member with an aneurysm

7. Thumb-palm test

8. Temporal arteritis (and other autoimmune disorders)

- Intracranial Aneurysm
- Family History
- Simple Renal Cysts
- Thoracic Aortic Aneurysm
- Thumb-palm sign

Conclusions: Patients with GCA have a twofold increased risk of aortic aneurysm, and this should be considered within the range of other risk factors including male gender, age, and smoking. A separate screening programme is not indicated. The protective effect of diabetes in the development of aortic aneurysms in patients with GCA is also demonstrated.