Prevalence of Thoracic Aneurysms or Dilatations in Patients with the Intracranial Aneurysms

Dan Laukka MD; Emily Pan; Terhi Fordell; Kemal Alpay; Melissa Rahi; Jussi Hirvonen; Jaakko Rinne MD; Jarmo Gunn [Institution]

Department of Neurosurgery, Division of Clinical Neurosciences, Turku University Hospital, University of Turku; Heart Center, Turku University Hospital, University of Turku

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Introduction

Aortic aneurysms and intracranial aneurysms (IA) shares similar comorbidities and genetic risk factors. Patients with thoracic aortic aneurysms have higher prevalence of intracranial aneurysms compared to general population. However, larger scale studies evaluating the entire thoracic aorta in the patients with IA, and in relation to fusiform IAs are not available.

Methods

We reviewed retrospectively records for 1777 patients diagnosed with ruptured or unruptured IAs at our institution between 2006 and 2016. From these patients we included 519 patients with an available contrast-enhanced Computed Tomography Angiography, unenhanced Computed Tomography, Magnetic Resonance Image/Angiography or Catheter Arteriography with sufficient coverage of the chest area to reliably evaluate thoracic aortic dimensions. Thoracic aortic dimensions were compared to reference values of general population.

Results

From 519 patients 94.6% (n=491) had saccular and 5.4% (n=28) fusiform intracranial aneurysm, 41.6% (N=216) had ruptured and 56.4% unruptured intracranial aneurysm. In patients with saccular IA total prevalence of thoracic aortic dilatations and aneurysms were 17% and 6% and in patients with fusiform IA prevalence were 29% and 18%. Aortic arch was the most common location for thoracic aortic dilation (prevalence 64%) in patients with saccular IA and ascending aorta in patients with fusiform aneurysm. Rheumatoid disease (OR 3.00, p=0.01) and alcohol abuse (OR 3.69, p=0.01) were significant risk factors for aortic dilatation in multivariate analysis.

Conclusions

The prevalence of thoracic aortic aneurysms and dilatations is higher in patients with intracranial saccular aneurysms and especially in patients with fusiform aneurysms compared to reports from the general population. Patients with saccular intracranial aneurysms and a history of rheumatoid disease and/or excessive alcohol consumption and patients with fusiform intracranial aneurysm have a very high risk for thoracic aortic aneurysms and dilatations and could be considered for thoracic aortic aneurysm screening.

Learning Objectives

By the conclusion of this session, participants should be able to: 1) Be aware of high prevalence of thoracic aortic aneurysms and dilatations in patients with intracranial aneurysms. 2) Discuss, in small groups, which patients have a very high risk for thoracic aortic dilatations and aneurysms. 3) Identify, which patients with intracranial aneurysms could be considered for thoracic aortic aneurysm screening.

References

Figure1

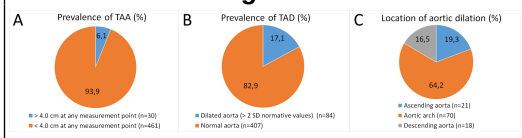

Figure 1. Prevalence of thoracic aortic aneurysms (TAA; diameter > 40 mm at any measurement point) (A) and thoracic aortic dilatation (TAD; > 2 SD of normative values) (B) and location of thoracic aortic dilatations (C) in patients with saccular intracranial aneurysms.

Figure2

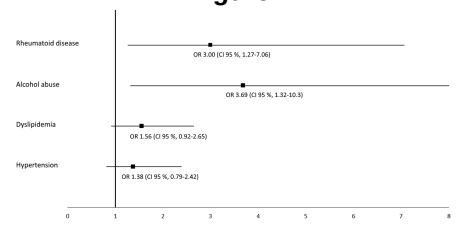

Figure 2. Multivariable Analysis of Risk Factors for thoracic aortic dilatation in patients with intracranial aneurysms