




SHAREABLE PDF

Obstructive sleep apnoea and the progression of thoracic aortic aneurysm: a prospective cohort study

Thomas Gaisl ^{1,2}, Protazy Rejmer¹, Maurice Roeder¹, Patrick Baumgartner¹, Noriane A. Sievi¹, Sandra Siegfried³, Simon F. Stämpfli⁴, Robert Thurnheer⁵, John R. Stradling⁶, Felix C. Tanner⁷ and Malcolm Kohler¹

Affiliations: ¹Dept of Pulmonology, University Hospital Zurich, Zurich, Switzerland. ²Dept of Epidemiology, Harvard T.H. Chan School of Public Health, Boston, MA, USA. ³Dept of Biostatistics, Epidemiology, Biostatistics and Prevention Institute, University of Zurich, Zurich, Switzerland. ⁴Dept of Cardiology, Lucerne Cantonal Hospital, Lucerne, Switzerland. ⁵Pulmonary Division, Münsterlingen Cantonal Hospital, Münsterlingen, Switzerland. ⁶National Institute for Health Research Oxford Biomedical Research Centre, Oxford University Hospitals NHS Foundation Trust and University of Oxford, Oxford, UK. ⁷Dept of Cardiology, University Hospital Zurich, Zurich, Switzerland.

Correspondence: Malcolm Kohler, Dept of Pulmonology, University Hospital Zurich, Raemistrasse 100, 8091 Zurich, Switzerland. E-mail: malcolm.kohler@usz.ch



@ERSpublications

Obstructive sleep apnoea may be an independent risk factor for faster thoracic aortic aneurysm expansion and thus potentially contributes to life-threatening complications in aortic disease
<https://bit.ly/35Qp4kO>

Cite this article as: Gaisl T, Rejmer P, Roeder M, *et al.* Obstructive sleep apnoea and the progression of thoracic aortic aneurysm: a prospective cohort study. *Eur Respir J* 2021; 57: 2003322 [<https://doi.org/10.1183/13993003.03322-2020>].

This single-page version can be shared freely online.

ABSTRACT

Background: Obstructive sleep apnoea (OSA) is associated with an increased prevalence of aortic aneurysms and it has also been suggested that severe OSA furthers aneurysm expansion in the abdomen. We evaluated whether OSA is a risk factor for the progression of ascending thoracic aortic aneurysm (TAA).

Methods: Patients with TAA underwent yearly standardised echocardiographic measurements of the ascending aorta over 3 years and two level III sleep studies. The primary outcome was the expansion rate of TAA in relation to the apnoea–hypopnoea index (AHI). Secondary outcomes included surveillance for aortic events (composite end-points of rupture/dissection, elective surgery or death).

Results: Between July 2014 and March 2020, 230 patients (median age 70 years, 83.5% male) participated in the cohort. At baseline, 34.8% of patients had AHI ≥ 15 events·h⁻¹. There was no association between TAA diameter and AHI at baseline. After 3 years, mean \pm SD expansion rates were 0.55 \pm 1.25 mm at the aortic sinus and 0.60 \pm 1.12 mm at the ascending aorta. In the regression analysis, after controlling for baseline diameter and cardiovascular risk factors, there was strong evidence for a positive association of TAA expansion with AHI (aortic sinus estimate 0.025 mm, 95% CI 0.009–0.040 mm; $p < 0.001$ and ascending aorta estimate 0.026 mm, 95% CI 0.011–0.041 mm; $p = 0.001$). 20 participants (8%) experienced an aortic event; however, there was no association with OSA severity.

Conclusion: OSA may be a modest but independent risk factor for faster TAA expansion and thus potentially contributes to life-threatening complications in aortic disease.