

European Respiratory Society Annual Congress 2012

Abstract Number: 4864

Publication Number: P912

Abstract Group: 4.2. Sleep and Control of Breathing

Keyword 1: Sleep studies **Keyword 2:** Circulation **Keyword 3:** Apnoea / Hypopnea

Title: Overnight pulse propagation time derived from oximetry is associated with daytime blood pressure in patients with sleep apnea

Dr. Ludger 30354 Grote ludger.grote@lungall.gu.se MD ¹, Dr. Dirk 30355 Sommermeyer dirk.sommermeyer@lungall.gu.se ^{1,2}, Dr. Ding 30356 Zou zou.ding@lungall.gu.se MD ¹, Dr. Derek 30357 Eder derek.eder@lungall.gu.se ¹, Prof. Dr Joachim 30358 Ficker joachim.ficker@nu.de MD ³, Prof. Dr Winfried 30374 Randerath win.randerath@solin.de MD ⁴, Prof. Dr Ingo 30381 Fietze ingo.fietze@charite.de MD ⁵, Prof. Dr Bernd 30386 Sanner bernd.sanner@wupp.de MD ⁶ and Prof. Dr Jan 30389 Hedner jan.hedner@lungall.gu.se MD ¹. ¹ Dept. of Pulmonary Medicine, Sahlgrenska University Hospital, Gothenburg, Sweden ; ² Institute for Monitoring, Diagnosis and Assistance, SRH University Heidelberg, Heidelberg, Germany ; ³ Dept. of Pulmonary Medicine, Clinic Nürnberg Nord, Nürnberg, Germany ; ⁴ Dept. of Pulmonary Medicine, Bethanien Hospital, Solingen, Germany ; ⁵ Dept. of Cardiology, University Hospital Charité, Berlin, Germany and ⁶ Dept. of Pulmonary Medicine, Bethesda Hospital, Wuppertal, Germany .

Body: Introduction The state of sleep is characterized by unloading of the autonomic nervous system and represents an opportunity to investigate the properties of the cardiovascular (CV) system. We investigated overnight pulse propagation time (PPT) as an indirect measure of vascular stiffness during sleep and its association with daytime blood pressure (BP). Methods The digital pulse wave, derived from finger oximetry, was recorded during sleep in 495 subjects (169 females, age 54±12 y, BMI 30±6 kg/m², AHI 19±23 n/h) referred to five sleep centers. Office BP and established CV risk factors were assessed. PPT was calculated as the time between the top and the subsequent dichotic notch of the digital pulse wave. Mean PPT across the entire sleep period was calculated. Results PPT was associated with age, systolic BP, diastolic BP, the number of apneic as well as hypoxic events during sleep ($r=-0.54, -0.19, -0.21, -0.13, \text{ and } -0.11, p<0.01$ respectively). PPT was lower in patients with hypertension compared to normotensives (160±34 ms vs. 178± 47 ms, $p<0.001$). In a multivariate analysis, PPT was independently associated with age, height, waist, smoking, hypertension and diabetes but not sleep apnea indices. Conclusions PPT determined by overnight oximetry reflects daytime BP and presence of hypertension. Assessment of PPT during sleep may be a useful tool for classification of overall CV function and risk. The study was supported by Weinmann GMBH, the Swedish Heart and Lung Foundation and the University of Gothenburg.