

4<sup>th</sup> International Conference on

## CHRONIC OBSTRUCTIVE PULMONARY DISEASE

May 29-31, 2017 Osaka, Japan

**Prevalence and determinants of cognitive impairment in COPD patients enrolled for pulmonary rehabilitation: A preliminary analysis**Vasileios Andrianopoulos<sup>1</sup>, Rainer Gloeckl<sup>1,2</sup>, Tessa Schneeberger<sup>1,3</sup>, Inga Jarosch<sup>1</sup>, Christoph Schneider<sup>1,3</sup>, Ioannis Vogiatzis<sup>4</sup>, Robert Bals<sup>5</sup> and Klaus Kenn<sup>1,3</sup><sup>1</sup>Schoen Klinik Berchtesgadener Land, Germany<sup>2</sup>Technische Universität München, Germany<sup>3</sup>Germany & Philipps University Marburg, Germany<sup>4</sup>National and Kapodistrian University of Athens, Greece<sup>5</sup>Allergology and Critical Care Medicine, Germany

**Introduction:** Cognitive impairment (CI) is a prevalent extrapulmonary manifestation in COPD, which is associated with poor quality of life and increased mortality. We assessed the prevalence and determinants of CI in patients enrolled for a comprehensive 3-week pulmonary rehabilitation program.

**Method:** 40 COPD patients (aged: 68±7 yrs; FEV<sub>1</sub>:47±15%; 43% women) underwent cognitive baseline assessment using a detailed neuropsychological testing battery. Patients were assigned to “CI” and “non-CI” groups according to Montreal Cognitive Assessment (MoCA) cutoff score ≤25 points. Patients also performed a cycle endurance test at 75% of peak work rate (WR<sub>peak</sub>) while transcutaneous carbon-dioxide partial-pressure (T<sub>c</sub>PCO<sub>2</sub>) and cortical tissue oxygen saturation index (TOI) were recorded by SenTec and Portalite digital monitoring systems, respectively.

**Results:** 17 patients (42%) presented evidences of CI (MoCA≤25) with also lower scores in the other cognitive tests of testing battery (all p≤0.012). CI group had worse memory, attention, language/executive, fluency, visuospatial (all p≤0.043) and Stroop-test performance (reaction time: 1.29 s vs 1.68 s, p=0.046; Accuracy: 96.5% vs 89.8%, p=0.010). CI group had greater oxygen desaturation (SpO<sub>2</sub> nadir: 92.7% vs 89.7%, p=0.023) and lower cortical tissue oxygenation (TOI) before and at end of exercise (p=0.014/p=0.045). Certain thresholds of resting PO<sub>2</sub>(≤65 mmHg), TOI-pre (≤65%), SpO<sub>2</sub> nadir (≤90%) independently increased the risk for CI. Substantial T<sub>c</sub>PCO<sub>2</sub> changes of >4 mmHg at exertion showed a trend (p=0.051) toward CI.

**Conclusion:** CI is highly prevalent in patients with COPD and affects several cognitive domains. It is associated with arterial desaturation (SpO<sub>2</sub> nadir) and local oxygen deficiency in cerebral cortex. Large PCO<sub>2</sub> changes at exertion may be linked to CI in COPD.

**Biography**

Vasileios Andrianopoulos is a Clinical Exercise Physiologist working as Postdoctoral Research Fellow at Schoen Klinik Berchtesgadener Land in Germany. He has his expertise in COPD Pathophysiology, Clinical Exercise Assessment and Pulmonary Rehabilitation Programs for COPD patients. Devoting himself to research, he acquired experience in designing research protocols, analyzing data and writing manuscripts as well as in operating several clinical devices. He has numerous publications in health and patients with COPD and he is an active member of the European Respiratory Society (ERS) College of Experts. Recently, he was awarded with the prestigious Marie Skłodowska-Curie fellowship co-founded by the European Union and the European Respiratory Society (ERS) for his project about cognitive dysfunction in COPD.

VAndrianopoulos@Schoen-Kliniken.de

**Notes:**