European Respiratory Society
Annual Congress 2012

Abstract Number: 4646

Publication Number: P448

Abstract Group: 4.2. Sleep and Control of Breathing

Keyword 1: Sleep disorders **Keyword 2:** Sleep studies **Keyword 3:** No keyword

Title: Coexistence of central sleep apnea or periodic breathing pattern in patients with congestive heart failure and obstructive sleep apnea

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Body: Background: The presence of altered ventilator control instability in congestive heart failure (CHF) patients with obstructive sleep apnea (OSA) may have significant therapeutic implications. Indicators for ventilator control instability can be significant proportions of central sleep apnea (CSA) and/or a periodic breathing (PB) pattern. The aim of the present study was to determine the prevalence of such indicators in CHF patients with OSA. Patients and Methods: The ongoing German multi-center SchlaHF registry prospectively included 7007 stable CHF patients (NYHA class ≥II and LVEF ≤45%) from cardiology practices and cardiology departments of hospitals. Patients were studied with a two-channel screening device (nasal airflow, pulse oximetry; ApneaLink, ResMed, Sydney, Australia) that detects PB patterns based on an algorithm using pattern recognition. Patients with suspected SDB received polysomnography (PSG) with certified scoring. Results: Of the 2183 PSG-patients 1583 (73%) had an AHI ≥15/h, of whom 49% had OSA (≥50% of apneas and hypopneas were obstructive). In such CHF patients with OSA the prevalence of a significant proportion of central apneas and hypopneas (20-49%) was 35%. The prevalence of objectively assessed PB was 44% in OSA patients. 350 (59%) heart failure patients with OSA presented with either a significant proportion of CSA and/or a PB pattern. Conclusions: The high prevalence of a significant proportion of CSA and objectively assessed PB pattern in CHF patients with OSA suggests ventilator control instability that may have an impact on the appropriate modality of positive airway pressure therapy to suppress apneas and hypopneas.