

# European Respiratory Society Annual Congress 2012

**Abstract Number:** 3619

**Publication Number:** P882

**Abstract Group:** 4.2. Sleep and Control of Breathing

**Keyword 1:** Sleep disorders **Keyword 2:** Circulation **Keyword 3:** Comorbidities

**Title:** Gender-related association between respiratory stability and Cheyne-Stokes respiration in chronic heart failure – A matched control study

Dr. Thomas 20876 Bitter tbitter@hdz-nrw.de MD <sup>1</sup>, Solvey 20877 Roman-Garcia tbitter@hdz-nrw.de <sup>2</sup>, Dr. Zisis 20878 Dimitriadis zdimitriadis@hdz-nrw.de MD <sup>1</sup>, Dr. Britta 20879 Körber bkoerber@hdz-nrw.de MD <sup>1</sup>, Dr. Christian 20880 Prinz cprinz@hdz-nrw.de MD <sup>1</sup>, Prof. Dieter 20882 Horstkotte akleemeyer@hdz-nrw.de MD <sup>1</sup>, Dr. Jost 28600 Niedermeyer niedermeyer@khbo.de MD <sup>3</sup> and Dr. Olaf 20884 Oldenburg ooldenburg@hdz-nrw.de MD <sup>1</sup>. <sup>1</sup> Department of Cardiology, Heart and Diabetes Center North Rhine-Westphalia, Ruhr University Bochum, Bad Oeynhausen, Germany, 32545 ; <sup>2</sup> Cardiac Research Unit, Heart and Diabetes Center North Rhine-Westphalia, Ruhr University Bochum, Bad Oeynhausen, Germany, 32545 and <sup>3</sup> Department of Internal Medicine, General Hospital Bad Oeynhausen, Germany .

**Body:** Introduction: Hypersensitive ventilatory feedback loop has major impact on the manifestation of Cheyne-Stokes respiration (CSA) in chronic heart failure (CHF). As CSA mainly affects male CHF patients (pts), this study aims to clarify the role of respiratory stability in the evolution of CSA in men and women. Methods: We investigated 563 pts with CHF (91 female, LVEF  $\leq$ 45%, NYHA-class  $\geq$ 2) using echocardiography, cardiopulmonary exercise testing (CPX), cardiorespiratory polygraphy, measurement of hyperoxic, hypercapnic ventilatory response (HCVR), and standard laboratory. Adjusted for age ( $\pm$ 2 years), body mass index (BMI;  $\pm$  2), and LVEF ( $\pm$  3%) 79 matched pairs (male/female) were eligible for analysis. Results: Obstructive sleep apnoea (AHI  $\geq$ 5/h) was present in 12 female (15.2%) and 13 male (16.4%) pts (p=n.s.), CSA (AHI  $\geq$ 5/h) in 30 (37.9%) female and 54 (68.4%) male pts (p<0.001). Parameters of respiratory instability (female vs. male: daytime pCO<sub>2</sub> 36.7 (interquartile range (IQR) 34.4-39.4) vs. 36.7 (IQR 34.8-38.7), VE/VCO<sub>2</sub> slope during CPX 34 (IQR 30-40) vs. 35 (IQR 31-40), HCVR 2.32 (IQR 1.71-3.49) vs. 2.69 (IQR 2.01-4.45) did not show a significant difference. Adjusted for age, NYHA-class, BMI, heart rate, LVEF, CRP, creatinine, NT-proBNP stepwise regression analysis revealed HCVR (p=0.03) an independent predictor for CSA in male pts while NYHA-class (p=0.04) was the only independent predictor for CSA in female pts. Conclusion: These data suggest gender-related differences in the evolution of CSA. Additional studies are warranted to figure out a more sophisticated pathophysiological concept that may elucidate these findings.