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Title: Pulmonary diffusion capacity is not associated with severity of Cheyne-Stokes respiration in heart failure patients

Olaf 8999 Oldenburg ooldenburg@hdz-nrw.de MD [1], Britta 8995 Körber bkoerber@hdz-nrw.de MD [1], Thomas 8996 Bitter tbitter@hdz-nrw.de MD [1], Thomas 8997 Fischbach tfischbach@hdz-nrw.de MD [1] and Dieter 8998 Horstkotte akleemeyer@hdz-nrw.de MD [1]. [1] Department of Cardiology, Heart and Diabetes Center North Rhine-Westphalia, Ruhr University Bochum, Bad Oeynhausen, Germany .

Body: A recent study in severe heart failure (HF) patients indicates a possible pathophysiological role of an impaired pulmonary diffusion capacity and respiratory disturbance during sleep, especially the degree of Cheyne-Stokes respiration (CSR). Aim of the present study was to verify this hypothesis in a larger cohort of HF patients. In 87 patients (83 male, age 68 ± 9 years) with polysomnography confirmed and untreated CSR due to cardiac failure (NYHA $\geq$ II, LV-EF $\leq$45%), pulmonary diffusion capacity (TLCO and KCO) were prospectively investigated using the single-breath method. Apnoea-hypopnoea-index (AHI) was 38.0 ± 14/h, LV-EF 34 ± 7%, TLCO 67 ± 17% of normal and alveolar-volume corrected diffusion capacity (KCO) 85 ± 20% of normal. Correlation analysis using Spearman rank order correlation revealed no significant correlation of AHI and TLCO ($r = 0.071$, $p = 0.516$) or AHI and KCO (0.019, $p = 0.863$).

In our cohort of HF patients with untreated CSR no correlation of respiratory disturbance during sleep and pulmonary diffusion capacity was found. Thus, a significant role of an impaired pulmonary diffusion on CSR genesis seems to be unlikely.