

European Respiratory Society Annual Congress 2012

Abstract Number: 4436

Publication Number: P971

Abstract Group: 4.3. Pulmonary Circulation and Pulmonary Vascular Disease

Keyword 1: COPD - exacerbations **Keyword 2:** COPD - management **Keyword 3:** Pulmonary hypertension

Title: Impact of a wireless implanted pulmonary artery pressure monitoring system in heart failure patients with comorbid chronic obstructive pulmonary disease

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Body: Introduction: Chronic obstructive pulmonary disease (COPD) is a common comorbidity for heart failure (HF) patients. The presence of high pulmonary artery pressures (PAP) are independently associated with COPD and HF exacerbations. Objectives: We performed a retrospective analysis to evaluate if PAP monitoring and therapy reduced HF hospitalizations (HFH) in HF patients with a medical history of COPD and/or receiving COPD therapies. Methods: The CHAMPION trial enrolled 550 patients with NYHA class III HF who were followed for an average of 15 months. In the treatment group, clinicians used PAP data to guide therapy decisions in addition to standard of care versus standard of care alone in the control group. Results: In the entire CHAMPION cohort, treatment had a 37% reduction in HFH rates (0.46 vs. 0.73, HR 0.63, 95% CI 0.52-0.77, p<0.0001, Anderson-Gill). In the subgroup of 187 patients with comorbid COPD, treatment had a 41% reduction in HFH rates (0.55 vs. 0.96, HR 0.59, 95% CI 0.44-0.81, p=0.0009). Reductions in PAP were analyzed using an area under the curve (AUC) methodology. Overall, treatment had an average AUC reduction of 201.5 mmHg days compared to an increase of 106.5 mmHg days in control (p=0.0299, ANCOVA). In the COPD subgroup, treatment had an average reduction of 353.1 mmHg days compared to a reduction of 57.0 mmHg days in control (p=0.3687). Conclusions: HF patients with COPD experience high HFH rates but have pronounced benefit from PAP monitoring. Further investigations that analyze the relationship between PAP, COPD, and HF and its implication towards new treatment strategies are warranted.

