DO CHANGES IN PULMONARY HEMODYNAMICS PREDICT CLINICAL EVENTS IN PULMONARY ARTERIAL HYPERTENSION? A META-ANALYSIS OF 17 STUDIES

ACC Moderated Poster Contributions
McCormick Place South, Hall A
Sunday, March 25, 2012, 9:30 a.m.-10:30 a.m.

Session Title: Pulmonary Hypertension Prognosis/Outcomes
Abstract Category: 30. Pulmonary Hypertension
Presentation Number: 1131-540

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Background: Right heart catheterization remains the gold standard in diagnosis and evaluation of pulmonary arterial hypertension (PAH). The aim of this study was to verify whether changes in hemodynamics reflect the incidence of clinical events in PAH patients.

Methods: MEDLINE, Cochrane, ISI Web of Science and SCOPUS database were searched for articles about PAH treatment until November 2011. All randomized trials assessing hemodynamics at baseline and at end of follow-up and including clinical end-points (all-cause death, hospitalization for PAH and/or lung or heart-lung transplantation, initiation of PAH rescue therapy) were included. Meta-analysis was performed to assess the influence of treatments on outcomes. Meta-regression analysis was performed to test the relationship between hemodynamics (pulmonary artery pressure, pulmonary vascular resistance, cardiac index and right atrial pressure) changes and outcomes. The influence of baseline patients' characteristics, hemodynamics at baseline, 6-minute walk distance (6MWD), Detsky quality score, follow-up and study publication year were also explored. Macaskill’s modified test was used to assess the presence of publication bias.

Results: 17 trials enrolling 2,417 participants were included. Active treatments led to significant reduction in the risk of all-cause death (odds ratio [OR]: 0.533; 95% confidence interval [CI]: 0.341 to 0.833; p<0.01), hospitalization for PAH and/or lung or heart-lung transplantation (OR: 0.384; CI: 0.218 to 0.674; p<0.01), initiation of PAH rescue therapy (OR: 0.341; CI: 0.200 to 0.582; p<0.01) and composite outcome (OR: 0.368; CI: 0.277 to 0.489; p<0.01). In meta-regression analysis, no relationship between hemodynamics changes from baseline to end of follow-up and outcomes was detected. No potential confounding variable or publication bias was detected. There was no heterogeneity among trials included in meta-analysis. Changes in pulmonary vascular resistance correlated with changes in 6MWD (r=−0.63; p<0.01).

Conclusions: in PAH patients, improvement in pulmonary hemodynamics, induced by pharmacological treatment, does not predict reduction in clinical outcomes.