The Obesity Paradox in Pulmonary Hypertension: Observations from a Nationwide Inpatient Sample Database 2003-2011

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Background: Many studies and meta-analyses have reported lower mortality rates in obese patients than non-obese patients with various cardiovascular disorders, a phenomenon known as the “obesity paradox”. However, very limited data exists regarding the impact of obesity status and prognosis in patients with pulmonary hypertension (PH).

Methods: We used the 2003-2011 National Inpatient Sample databases to identify all patients aged ≥18 years with a primary diagnosis of PH (both primary and secondary PH). Univariate and Multivariable analyses were used to compare in-hospital mortality, length of stay and hospitalization cost between obese and non-obese PH patients.

Results: 140,382 patients with a primary diagnosis of PH were identified. The over all PH group had a mean age of 63.2±16.3 years, were predominantly female (67.3%), white (67.7%), Medicare insurers (59.3%) and lean, with obesity present in 22.8% patients. Obese patients had higher prevalence of diabetes, hypertension, dyslipidemia, HF, Obstructive Sleep apnea and chronic pulmonary disease than non-obese patients. Additionally, they were less likely to have AF, prior MI, carotid artery disease, peripheral vascular disease, valvular heart disease, acquired immunodeficiency disease and connective tissue disorders. In the overall cohort of PH patients, obesity was associated with lower in-hospital mortality (2.7% versus 5.5%; unadjusted OR 0.47, 95% CI 0.43–0.50, P<0.001). This unadjusted mortality difference was reduced markedly, but remained significant statistically, after risk adjustment for demographics, hospital characteristics and baseline comorbidities (adjusted OR 0.77, 95% CI 0.70–0.84, P<0.001). Obesity was also associated with shorter mean length of hospital stay (3.5 versus 4.5 days, P<0.001) and lower average hospitalization charges.

Conclusion: In this nationwide cohort of patients with PH, we observed significantly lower risk adjusted in-hospital mortality in obese patients, suggesting that the obesity paradox also applies to PH patients.