Pulmonary hypertension is an adverse risk factor for peri-procedural complications in patients undergoing pulmonary vein isolation and ablation for atrial fibrillation

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Background: Recent studies have identified Pulmonary hypertension (PHT) as a predictor for poor clinical outcomes in Atrial fibrillation (AF) with increased fold in mortality. PHT is associated with right ventricular pressure and volume overload eventually leading to right heart failure. These structural changes can lead to electrophysiological abnormalities, with AF being one of the most common. Percutaneous catheter ablation and pulmonary vein isolation is becoming more common ground for management of paroxysmal atrial fibrillation (AF). We sought to investigate the impact of PHT as an adverse risk factor for patients undergoing pulmonary vein isolation and ablation for AF.

Methods: We utilized the National Inpatient Sample from 2016-2019 to identify roughly 49,425 hospitalized adults who underwent AF Ablation. These hospitalizations were further stratified based on the presence of PHT. A multivariate regression model was used to adjust for confounders and analyze the variables.

Results: Of those who underwent AF Ablation, 5,329 (10.7%) had PHT. In-hospital mortality was higher in those with PHT (2.5% vs 0.9%; p<0.001). Figure 1 shows the Forrest plot for multivariate analysis of in-hospital outcomes when adjusted for patient demographics, comorbidities, and hospital characteristics. When adjusted similarly, patients with AF and PHT had longer length of stay (LOS) by 2.9 days (p<0.001) and had additional hospital costs (HC) of $25,122 (p<0.001).

Conclusion: In this study, patients undergoing AF ablation with co-existing PHT had significantly worse outcomes in terms of in-hospital mortality, LOS, HC, atrial flutter, ventricular tachycardia, AKI, sepsis, pneumonia, and endotracheal intubation. One major limitation of our study is the lack of outpatient follow up. Given that overall outcomes are worse in the setting of PHT, potential strategies for aggressive rate and volume control prior to the ablation for AF should be pursued to avoid negative outcomes. AF patients with co-existing PHT should be aggressively monitored during hospitalizations for AF ablation as they have the potential to have worse peri-procedural outcomes.

Figure 1. Periprocedural Outcomes in patients undergoing PCA for AF with Co-Existing PHT