

Poster presentation

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## Pulmonary hypertension and late gadolinium enhancement of the right ventricular insertion point and its clinical implications

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### Methods

We evaluated 48 patients with suspected PH referred for CMR as part of their clinical assessment. Imaging was performed at 1.5T. Retrospectively gated cines of a left ventricular short axis stack were obtained using SSFP (TR 2.9 ms, TE 1.5 ms, flip angle 60°, temporal resolution ~40 ms). LGE images of the same views were obtained 10 minutes after infusion of Gd-DTPA (0.2 mmol/kg) using phase sensitive inversion recovery (TR 4.5 ms, TE 2.2 ms, TI 200-300 ms, flip angle 30°, PSIR flip angle 5°, voxel size 2 × 2 × 10 mm, sense 2). The cines were used to determine RV end-diastolic volume (RVEDV), end-systolic volume (RVESV), and ejection fraction (RVEF). Two readers blinded to hemodynamic, functional, and laboratory data jointly determined the presence of RVIP-LGE. A subgroup of these patients underwent right heart catheterization (n = 28) and exercise testing (n = 34). Continuous variables were reported as mean ± standard deviation. Groups (based on presence or absence of LGE) were compared using a t-test, with p-value < 0.05 being significant.

### Results

The patients' WHO classification was: Group 1 (n = 30), Group 2 (n = 3), Group 3 (n = 1), Group 4 (n = 2), Group 5 (n = 1), and None (n = 11). LGE was indeterminate in 3 patients. Overall, 26/45 (58%) patients had RVIP-LGE. There was no difference in frequency of RVIP-LGE based on WHO classification. Patients with RVIP-LGE had larger RVEDV (253 ± 106 ml vs. 216 ± 107 ml; p = 0.07), RVESV (172 ± 108 ml vs. 133 ± 103 ml; p = 0.05), and lower RVEF

(35 ± 12% vs. 45 ± 14%; p = 0.02). See Figure 1. In the subgroup of patients who had a catheterization, RVIP-LGE was seen in 16/23 (70%) patients with PH (mean pulmonary artery pressure (mPAP) > 25 mm Hg). RVIP-LGE was associated with higher mPAP (48 ± 18 mm Hg vs. 33 ± 16 mm Hg; p = 0.04) and pulmonary vascular resistance (9.5

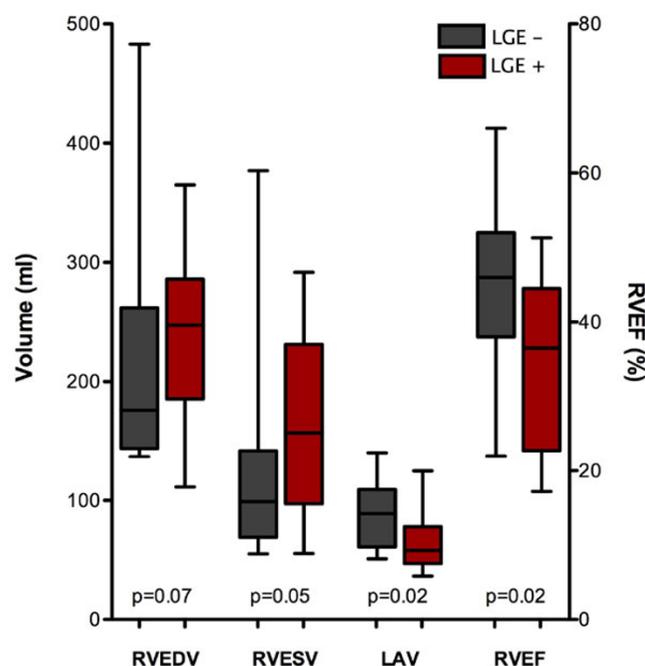
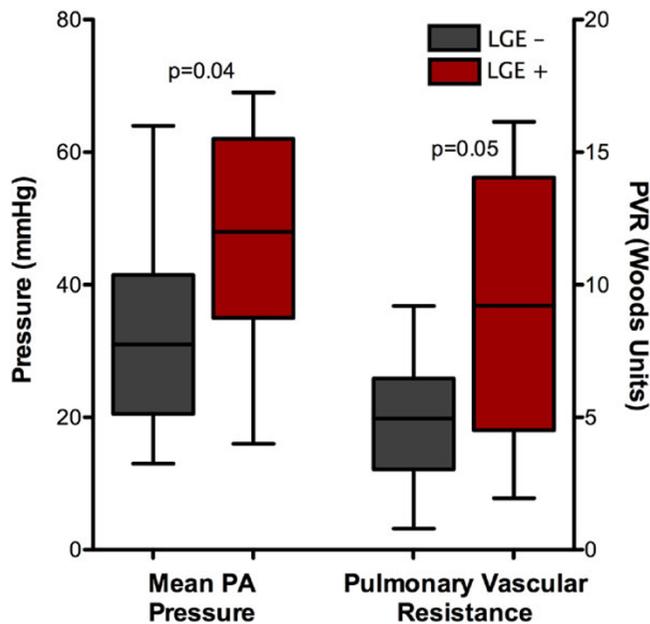


Figure 1



**Figure 2**

$\pm 5.3$  Woods units vs.  $4.9 \pm 2.6$  Woods units;  $p = 0.05$ ). See Figure 2. RVIP-LGE was not associated with WHO functional class, 6-minute walk time, maximum workload achieved during treadmill test, or treatment regimen.

### Conclusion

RVIP-LGE was seen in 70% of patients with PH. In our cohort, the finding was associated with adverse right ventricular remodeling and function and worse pulmonary artery hemodynamics. Further study is required to determine prognostic implications as this cohort is followed over time.

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