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CONDUCTANCE CATHETER DERIVED RIGHT VENTRICULAR DYSFUNCTION IS EVIDENT AFTER BALLOON EXPANDABLE TRANSCUTANEOUS AORTIC VALVE REPLACEMENT IN HUMANS

Poster Contributions

Poster Hall B1

Sunday, March 15, 2015, 3:45 p.m.-4:30 p.m.

Session Title: Pharmacotherapy and Complex Coronary Interventions

Abstract Category: 30. TCT@ACC-i2: Aortic Valve Disease

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Background: Transcatheter Aortic Valve Replacement (TAVR) is an established treatment for inoperable surgical high risk aortic valve stenosis. Rapid pacing (RP) is recommended for balloon expandable device implantation. We hypothesized that RP induced ischemic Right Ventricular (RV) dysfunction would mask any potential improvements post TAVR.

Methods: Twelve patients had RV conductance catheter assessment before and after TAVR (Figure A). Pressure-Volume loops were recorded with ventilation suspended. Load dependent and independent indices of RV contractility (expressed as mean±SD, pre- vs. post-TAVR) were compared.

Results: RV systolic function measured by preload recruitable stroke work: 21.7 ± 10.3 vs 13.4 ± 7.2 ; $p=0.03$ and end-systolic elastance (Ees) (mmHg/mL) was reduced: 0.43 ± 0.23 vs 0.29 ± 0.19 , $p = 0.23$. Diastolic dysfunction measured by the time constant of diastolic relaxation (Tau) (ms) was increased: 80.9 ± 50.3 vs 108.3 ± 69.1 , $p = 0.01$. The ventriculoarterial coupling ratio (Ees/Ea) suggested uncoupling: 1.25 ± 0.45 vs 0.82 ± 0.29 ; $p = 0.01$. The other indices did not show improvement: stroke volume (mL): 87.3 ± 30.7 vs 94.3 ± 28.2 , $p=0.42$; ejection fraction (%): 66.8 ± 12.5 vs 61.6 ± 11.1 , $p=0.41$; and end-diastolic pressure volume relationship (mmHg/mL): 0.12 ± 0.09 vs 0.10 ± 0.08 ; $p=0.48$.

Conclusion: RP causes deleterious effects on RV function following TAVR. Changes in clinical practice maybe required to prevent RP induced systolic and diastolic dysfunction.

