

Poster presentation

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## Is the term "exuberant hypertrophy" inappropriate? a 4-year AHA pre and post-aortic valve replacement CMR study

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Recent investigators have suggested women are particularly prone to develop exaggerated LVH in response to increased pressure as compared to men, especially in aortic stenosis. This has been proposed euphemistically as 'exuberant hypertrophy' implying that there is an inappropriate physiologic amplification to the typical hypertrophic response for a given afterload. Furthermore, it suggests that there is a divergent response at the gene level to explain this phenomenon. The societal implications for this are vast, potentially calling for distinct gender-based treatments. On the other hand, the majority of the inferences of this dichotomized observation have stemmed from 2D echocardiography and may be artifactual.

### Hypothesis

We hypothesize that 'exuberant hypertrophy' is a misnomer; after aortic valve replacement (AVR) there will be no sex difference in the manner or rate in which LVH occurs or regresses.

### Methods

After recruitment of 35 pts for a 2-year Cardiac MRI (CMR) study, a subgroup were re-recruited up to 4 years post-AVR. All pts underwent 3D volumetrics, LV mass and 3D EF (GE 1.5 T, WI) stratified by gender.

### Results

Ten pts were available for CMR at  $3 \pm 1$  yrs out to 4 years post-AVR for CMR. Woman (6; age:  $68 \pm 14$ ) and men (4; age:  $68 \pm 10$ ); were imaged. Baseline LV mass index was neither increased in females nor different between woman and men ( $75 \pm 16$  vs.  $101 \pm 23$  g/m<sup>2</sup>,  $p = \text{NS}$ ). However, baseline EF was dissimilar between woman and men ( $67 \pm 12$  vs.  $37 \pm 23\%$ ,  $p = \text{NS}$ ). Following AVR, in *absolute* or *relative* terms, LV mass regression was not different between sexes ( $65 \pm 17$  vs.  $73 \pm 11$  g/m<sup>2</sup>; representing a proportionate decrease in LV mass of  $11 \pm 16$  vs.  $28 \pm 17$  g/m<sup>2</sup>,  $p = \text{NS}$ ). Likewise, post-AVR, LVEF was not different ( $68 \pm 7$  vs.  $61 \pm 10\%$ ,  $p = \text{NS}$ ) but did markedly improve in males ( $1 \pm 10$  vs.  $24 \pm 20\%$ ,  $p < 0.05$ ), again without absolute change in LV mass index between gender.

### Conclusion

While conceptually intriguing and highly controversial, the gender-based differences of exaggerated LVH formation in response to pressure afterload that are based substantially on echocardiography appear to be *artificial* when based upon 3D CMR interrogation. The potential socio-economic repercussions, should a more disparate response to afterload have been found (either at baseline or after AVR), are nullified.