

## P9

### Effects of Serotonin (5- hydroxytryptamine) on Matrix Remodeling in Mitral Valve Chordae Tendineae – Implications to Carcinoid Valve Disease

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#### Objectives:

Serotonin (5HT) is a potent vasoactive agent, postulated to play a role in carcinoid valve disease. Mitral regurgitation is found in many patients using serotonin agonists (fenfluramine), and formation of tumors and subsequent thickening of the mitral valve strut chordae is speculated to be the cause. The objective of this study was to investigate the effect of 5HT on collagen content on dynamically stretched mitral valve strut chordae.

#### Method:

15mm lengths of mitral valve strut chordae were isolated from porcine hearts, and were stretched to 10% strain for 120 hours under two different conditions: (i) normal DMEM (control); (ii) normal DMEM with  $10^{-5}$ M 5HT. In addition there were two additional treatment groups that were statically incubated under the above conditions. Total soluble collagen content within samples was analyzed using a Sircol collagen assay.

#### Results:

Collagen content increased in the  $10^{-5}$ M 5HT group ( $5.7 \pm 1.8 \mu\text{g}/\text{mg}$  tissue dry weight) compared to the control group ( $2.48 \pm 1.3 \mu\text{g}/\text{mg}$ ), under dynamic stretch conditions. When the tissue was statically incubated, there was no change in the collagen content between the  $10^{-5}$ M 5HT group ( $3.29 \pm 1.5 \mu\text{g}/\text{mg}$ ) and the controls ( $2.96 \pm 0.82 \mu\text{g}/\text{mg}$ ).

#### Conclusions:

The synergistic effects of 5HT and cyclic stretch are investigated for the first time in an ex vivo system. Significant increase in the collagen content in presence of 5-HT could explain the chordal thickening found clinically. Further study is needed on the collagen sub-types involved and whether this translates to changes in mechanical properties.