



## Acute and Stable Ischemic Heart Disease

**ULTRASOUND INCREASES MYOCARDIAL BLOOD FLOW IN ACUTE MYOCARDIAL ISCHEMIA WITHOUT REDUCING INFARCT SIZE**

Poster Contributions  
Poster Hall, Hall C  
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**Background:** Ultrasound (US) treatment has been shown to increase blood flow to tissue *in vivo*. It has also been shown to increase eNOS phosphorylation, adenosine, and eicosanoids from endothelial cell *in vitro* resulting in better cell survival under oxygen-glucose deprivation. We hypothesized that these effects would result in reduced infarct size with US treatment in a model of acute myocardial infarction.

**Methods:** We studied control (n=10) and pulsed 1.05 MHz US treated open-chest dogs (n=10) undergoing occlusion of the left anterior descending coronary artery (LAD). The LAD perfusion bed size, collateral-derived border zone, risk area, and myocardial blood flow (MBF) were measured using myocardial contrast echocardiography. Regional function was measured using 2D-echocardiography. Plasma eicosanoid and adenosine levels were measured from the anterior cardiac vein.

**Results:** After coronary occlusion, epicardial MBF in the LAD bed was higher compared to control ( $16 \pm 15$  vs  $7 \pm 3$ ,  $p=0.05$ ) in US treated animals. However, endocardial MBF was similar ( $13 \pm 14$  vs  $14 \pm 7$ ) resulting in no difference in infarct size/risk area ratio between the two groups ( $53.5 \pm 20.4$  vs  $57.6 \pm 26.8$ ). US treatment was also associated with higher MBF in the collateral-derived border zone compared to control ( $16.8 \pm 19.5$  vs  $10.2 \pm 10.4$ ,  $p=0.03$ ) and higher wall thickening ( $2.88 \pm 2.52\%$  vs  $0.64 \pm 0.43\%$ ,  $p=0.01$ ). US application had no effect on eicosanoid or adenosine levels.

**Conclusions:** Despite maintenance of collateral-derived MBF in the border zone and epicardial MBF within the occluded LAD perfusion bed, endocardial MBF in the LAD bed was not favorably affected by US, resulting in no effect on infarct size. Furthermore, US had no effect on vasoactive compounds measured in venous blood draining the infarct bed.