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## A New Speckle Tracking Method for the Assessment of Myocardial Strain: Validation in an Animal Model of Ischemia-Reperfusion

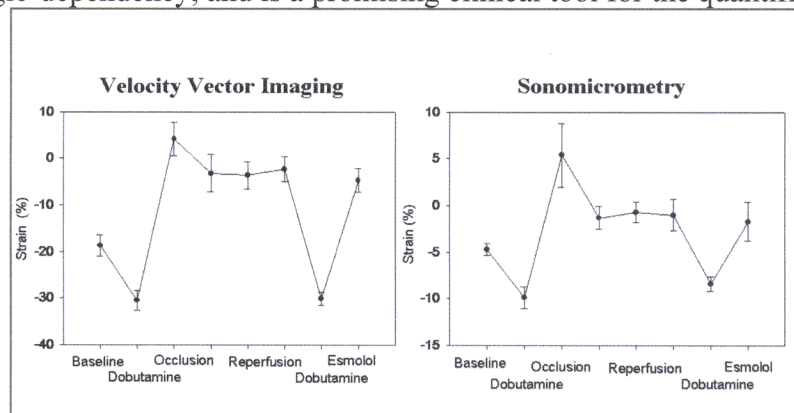
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**Objectives:** Tissue Doppler imaging allows non-invasive assessment of myocardial strain, but is angle-dependent. A new 2-dimensional strain imaging method (VVI, Velocity Vector Imaging, Axius™) based on speckle and endocardial border tracking, has been introduced. The aim of this study was to validate this novel technique as an angle-independent method for the assessment of strain, using sonomicrometry as a reference method.

**Methods:** Eight dogs were studied during baseline and various interventions causing alterations in regional function: dobutamine, coronary occlusion-reperfusion, followed by dobutamine and esmolol infusion. Echocardiographic images were acquired from short- and long-axis views of the left ventricle. Segment-length sonomicrometry crystals, implanted at the base and apex were used as the reference method. Velocity Vector Imaging analysis were performed off-line and strain measurements from ischemic and non-ischemia zones were compared to sonomicrometry.

**Results:** Changes in systolic strain in ischemic segments could be tracked well with VVI during the different hemodynamic states (Figure). There was a good correlation between VVI and the reference method for systolic strain in the short axis ( $r=0.88$ ,  $p<0.001$ ) and in the long axis ( $r=0.83$ ,  $p<0.001$ ). Strain measurements in non-ischemic basal segments also demonstrated a significant correlation between the two methods ( $r=0.65$ ,  $p<0.001$ ).

**Conclusions:** Velocity Vector Imaging, a new speckle tracking method, can accurately assess systolic myocardial strain without angle-dependency, and is a promising clinical tool for the quantification of



regional myocardial function.

**AHA Awards (Complete):**

No, I am not interested in AHA Early Career Investigator Awards or Travel Stipends : True

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