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## Non Invasive Imaging

### HIGH MECHANICAL INDEX IMPULSES FROM A DIAGNOSTIC TRANSDUCER DURING AN INTRAVENOUS MICROBUBBLE INFUSION CAN REDUCE ULTIMATE INFARCT SIZE WHEN COMPARED TO FULL DOSE TISSUE PLASMINOGEN ACTIVATOR IN ACUTE ST SEGMENT ELEVATION MYOCARDIAL INFARCTION

Oral Contributions

Room 146 B

Saturday, March 29, 2014, 8:30 a.m.-8:45 a.m.

Session Title: Expanding the Horizons of Echocardiography

Abstract Category: 15. Non Invasive Imaging: Echo

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Authors: *Feng Xie, Juefei Wu, John Lof, Samer Sayyed, Thomas Porter, University of Nebraska Medical Center, Omaha, NE, USA*

**Background:** Guided high mechanical index (MI) impulses from a modified diagnostic ultrasound transducer may be able to reduce the residual microvascular obstruction (MO) that exists following epicardial recanalization in acute ST segment elevation myocardial infarction (STEMI). We sought to determine how much the guided ultrasound therapy and microbubbles would compare to full dose fibrinolytic therapy in this setting.

**Methods:** In 16 atherosclerotic pigs with hyperlipidemia, acute thrombotic occlusions of the mid left anterior descending artery were created. After a 20 minute confirmed occlusion, pigs were randomly assigned to either a) full dose fibrinolytic therapy (TPA 1.0 mg/kg); b) low dose TPA (0.5 mg/kg) and guided high MI impulses from a modified diagnostic transducer (Philips 1.6 MHz, 1.2 MI, 20 usec pulse duration; DUS/MB/1/2TPA) during an intravenous lipid encapsulated microbubble infusion (MRX 801; NuvOx Pharma); or guided high MI impulses and microbubbles alone (DUS/MB alone) without TPA. Angiographic recanalization rates at 60 minutes into therapy were compared, as were infarct size (IS) as a function of risk area (salvageability index) at 48 hours using TTC and Evans Blue staining.

**Results:** Angiographic recanalization rates were 83% for DUS/MB/1/2 TPA compared to 50% for full dose TPA and 50% for DUS/MB alone. IS as a function of risk area was lowest for DUS/MB/1/2 TPA (salvageability index  $0.24 \pm 0.12$  for DUS/MB/1/2TPA versus  $0.50 \pm 0.32$  for full dose TPA alone, and  $0.36 \pm 0.27$  for DUS/MB alone;  $p < 0.05$  full dose TPA versus DUS/MB/1/2TPA).

**Conclusions:** Utilization of DUS/MB with low dose TPA can reduce infarct size in acute STEMI. DUS and MB alone appear partially successful and should be considered as independent therapy in acute STEMI