

## Acute Coronary Syndromes

### LEFT VAGUS NERVE STIMULATION SIGNIFICANTLY ATTENUATES VENTRICULAR DYSFUNCTION AND INFARCT SIZE THROUGH PREVENTION OF MITOCHONDRIAL DYSFUNCTION DURING ACUTE ISCHEMIA-REPERFUSION INJURY IN SWINE

Moderated Poster Contributions

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Authors: [Krekwit Shinlapawittayatorn](#), Kreokkiat Chinda, Siripong Palee, Sirirat Surinkaew, Kittiya Thunsiri, Punate Weerateerangkul, Siriporn Chattipakorn, Bruce H. KenKnight, Nipon Chattipakorn, Cardiac Electrophysiology Research & Training Center, Faculty of Medicine, Chiang Mai University, Chiang Mai, Thailand, Department of Oral Biology and Diagnostic Science, Faculty of Dentistry, Chiang Mai University, Chiang Mai, Thailand

**Background:** Right cervical vagus nerve stimulation (VNS) provides cardioprotective effects against acute ischemia-reperfusion injury (IRI) in small animals. We determined whether left cervical (LC) VNS applied either intermittently or continuously imparts cardioprotection against acute IRI in swine.

**Methods:** Thirty-two swine (25-30 kg) were randomized into 4 groups: Control (sham operated, no VNS), Continuous-VNS (C-VNS, 3.5mA, 20Hz), Intermittent-VNS (I-VNS, continuously recurring cycles of 21-s ON, 30-s OFF), and I-VNS+Atropine (1mg/kg). LC VNS was applied immediately after LAD occlusion (60 min), and continued until the end of reperfusion (120 min). The ischemic and non-ischemic myocardium was harvested for cardiac mitochondrial function assessment.

**Results:** LC VNS significantly reduced infarct size, improved ventricular function, decreased VF episodes, and attenuated cardiac mitochondrial reactive oxygen species production, depolarization and swelling, compared to Control. However, I-VNS produced the most profound cardioprotective effects, particularly infarct size reduction and decreased VF episodes, compared to C-VNS (Figure). These beneficial effects of VNS were abolished by Atropine, suggesting a dominant cholinergic pathway.

**Conclusions:** During IRI, both C-VNS and I-VNS provide significant cardioprotective effects. However, left I-VNS provides more robust efficacy than left C-VNS with respect to infarct size reduction and reperfusion arrhythmia prevention.

