



## CARDIAC ELECTRICAL BIOMARKER RESPONSE DURING PERCUTANEOUS CORONARY INTERVENTION

Poster Contributions  
Poster Hall, Hall C  
Saturday, March 18, 2017, 9:45 a.m.-10:30 a.m.

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Session Title: Novel Developments in Acute Coronary Syndromes  
Abstract Category: 15. Interventional Cardiology: ACS/AMI/Hemodynamics and Pharmacology  
Presentation Number: 1194-154

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**Background:** A new cardiac electrical biomarker (CEB) has been identified that is a measure of dipolar energy in a 12-lead ECG derived from 3 leads (I, aVF, V2). The CEB can potentially detect myocardial ischemia in real time. During PCI an obstruction to blood flow is induced causing localized myocardial ischemia for which the CEB may show a response. The study objective is to determine the CEB response during transient ischemia during PCI.

**Methods:** A prospective study of 12 patients with acute coronary syndrome (ACS) presenting for a PCI. 101 CEB measurements were recorded during various time points, including coronary angiography, coronary wiring, balloon inflation and stent deployment which involved various coronary arteries. Exclusion criteria: age <18 and lack of informed consent. Correlation of the baseline CEB with the maximum CEB response and site of lesion was performed using Spearman Correlation statistics. Data analysis was stratified by disease state (infarction vs. non-infarction), percent stenosis ( $\geq 80\%$  vs  $< 80\%$ ), and vessel size (small  $< 2.5$  mm), medium (2.5-3.0 mm) large ( $> 3$  mm) based on stent size.

**Results:** Compared to baseline, balloon and stent inflations resulted in an increase in CEB with high correlation ( $r = +0.705$ ,  $p < 0.001$ ). CEB response was greater in infarction vs. non-infarction cases (CEB Max:  $463.5 \pm 311.7$  (Median 434) vs  $213.8 \pm 269.2$  (Median 123),  $p < 0.001$ ). CEB response was greater in an incremental pattern from large vs. medium vs. small coronary arteries. (CEB Max:  $460.6 \pm 344.4$  (Median 459.5) vs  $248.5 \pm 308.5$  (Median 129.0) vs  $174.2 \pm 107.6$  (Median 132.5),  $p < 0.02$ ). CEB response was also greater in stenosis  $\geq 80\%$  vs  $< 80\%$  (CEB Max  $359.7 \pm 326.9$  (Median 201.0) vs  $109.8 \pm 110.8$  (Median 86.5),  $p < 0.001$ )

**Conclusions:** The CEB shows a positive response to balloon and stent inflation during PCI with a strong correlation. The CEB appears to show a stronger response to balloon inflation in larger arteries, cases involving infarction, and in greater severity stenosis. The CEB may be an efficient and timely means of detecting myocardial ischemia in patients who are being monitored in acute care settings. Further studies are warranted to validate the clinical applicability of the CEB response.