MYOCARDIAL ISCHEMIA AND INFARCTION

DYNAMIC NATURE OF NON-CULPRIT CORONARY ARTERY LESION MORPHOLOGY IN ST-SEGMENT ELEVATION MYOCARDIAL INFARCTION PATIENTS: A SERIAL VIRTUAL HISTOLOGY-INTRAVASCULAR ULTRASOUND ANALYSIS FROM THE HORIZONS-ACUTE MYOCARDIAL INFARCTION TRIAL

ACC Oral Contributions
Ernest N. Morial Convention Center, Room 238
Monday, April 04, 2011, 3:00 p.m.-3:15 p.m.

Session Title: Unstable Ischemic Syndromes: Acute Therapy and Long-Term Outcomes
Abstract Category: 4. Unstable Ischemic Syndrome/Long-Term Outcome
Presentation Number: 916-7

Authors: Zhijing Zhao, Bernhard Witzenbichler, Gary S. Mintz, So-Yeon Choi, Xiaofan Wu, Yong He, Ovidiu Dressler, Ecaterina Cristia, Helen Praise, Roxana Mehran, Gregg W. Stone, Akiko Maehara, Cardiovascular Research Foundation and Columbia Medical center, New York, NY, Charité University Medicine Berlin, Berlin, Germany

Background: The temporal stability of untreated, unruptured, non-culprit lesions in pts with ST-segment elevation myocardial infarction (STEMI) is unknown.

Methods: HORIZONS-AMI was a dual arm factorial randomized trial in pts with STEMI. As part of a formal IVUS substudy, serial (baseline and 13 month follow-up) Virtual Histology IVUS was performed in 100 non-culprit lesions (plaque burden >40%) in 63 pts. Fibroatheromas were classified as lesions with >10% confluent necrotic core. Those with >30° necrotic core abutting to the lumen in 3 consecutive frames were classified as thin-cap fibroatheroma (TCFA), other were called as thick-cap fibroatheroma (ThCFA).

Results: There were 3 main Virtual Histology-IVUS phenotypes: TCFA, ThCFA, or pathological intimal thickening (PIT). The frequency of TCFA increased from 43% at baseline to 54% at 13 month follow-up with 33 remaining unchanged, 8 evolving into a ThCFA, and 21 new TCFA developing from either PIT or ThCFA (Figure). Minimum lumen area(MLA) decreased from 7.3 [5.6,10.3] to 6.7 [5.6,10.1] mm², p<0.05; this was associated with an increase in % necrotic core at the MLA site (0.22 [0.13, 0.29] to 0.26[0.19, 0.35], p<0.0001) and over the entire length of the lesion (0.13[0.07, 0.21] to 0.18[0.11, 0.24], p<0.0001).

Conclusions: Untreated, unruptured, non-culprit lesions in STEMI pts are frequently unstable during 13 months follow-up with a decrease in MLA, increase in necrotic core, and overall devolution from stable to vulnerable plaque morphology.