SERIAL GREY-SCALE AND RADIOFREQUENCY INTRAVASCULAR ASSESSMENT OF PLAQUE MODIFICATION AND VESSEL GEOMETRY AT PROXIMAL AND DISTAL EDGES OF BARE-METAL AND DRUG-ELUTING STENTS

i2 Poster Contributions
McCormick Place South, Hall A
Saturday, March 24, 2012, 9:30 a.m.-Noon

Session Title: Intravascular Diagnostics
Abstract Category: 3. Intravascular Diagnostics
Presentation Number: 2527-550

Authors: José de Ribamar Costa, Dimytri Siqueira, Alexandre Abizaid, Daniel Chamie, Ricardo Costa, Renata Viana, Fausto Feres, Amanda Sousa, J. Eduardo Sousa, Instituto Dante Pazzanese, São Paulo, Brazil

Background: Little is known about the correlation between modifications in plaque composition at stent edges and the changes in vessel geometry. This study sought to evaluate, by serial grey-scale intravascular ultrasound (IVUS) and Virtual Histology™ (VH), the modifications in plaque composition at the edges of drug-eluting and bare-metal stents and the correlation of these findings with changes in the measurements of vessel, lumen and plaque area at those segments.

Methods: Single-center, prospective and randomized (1:1) evaluation of 40 patients with acute coronary syndrome treated with bare-metal (Driver™, n=20 patients) or drug-eluting stents (Cypher™, n=20 patients). IVUS and VH assessments were done post procedure and at 9 months. Primary endpoint included the modification in vessel, lumen and plaque area and in the composition of the plaque in the mean time between the baseline and follow-up procedure.

Results: At the proximal edge of both drug-eluting and bare-metal stents there was a trend to positive vessel remodeling (Δ=+0.6mm² vs. Δ=+0.4mm², p=0.13) which compensated the increase in plaque area (Δ=+0.5mm² with DES vs. Δ=+0.7mm² with BMS, p=0.10). At the distal edge, patients treated with drug-eluting stents had less plaque growth (Δ=+0.2mm² vs. Δ=+1.1mm², p<0.001), resulting in a larger lumen area at follow-up. By VH, there was a marked reduction in the % of fibrotic tissue and necrotic core in both edges of the two stents and a positive correlation was seen between increase in % of fibrofatty component and increase in plaque area (r=0.78, p=0.01).

Conclusion: Patients treated with DES experienced less plaque growth, especially at the distal edge of the stents. Modifications in plaque composition, with increase in fibrofatty content, might partially explain these findings.