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## Inside This Issue

### JACC WHITE PAPER

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##### Stent Thrombosis

1357

*David R. Holmes, Jr, Dean J. Kereiakes, Scot Garg, Patrick W. Serruys, Gregory J. Dehmer, Stephen G. Ellis, David O. Williams, Takeshi Kimura, David J. Moliterno*

Stent thrombosis (ST) with either drug-eluting stents (DES) or bare-metal stents (BMS) remains catastrophic and, although infrequent, modifies the risk-benefit equation of percutaneous coronary intervention. This White Paper by Holmes and colleagues reviews the literature regarding ST and divides the risk factors into the following categories: 1) the stent, including its geometry, polymer, and drug; 2) the patient, including clinical presentation and comorbidities; 3) the procedure, including residual dissection or incomplete expansion; and 4) the extent and duration of antiplatelet therapy and the patient response to this therapy. The authors hope that improved understanding of these risk factors will facilitate the identification of optimal preventive strategies.

### CLINICAL RESEARCH

#### INTERVENTIONAL CARDIOLOGY

##### Registry Shows Similar Outcomes at 5 to 10 Years for CABG or PCI for Left Main Disease

1366

*Duk-Woo Park, Young-Hak Kim, Sung-Cheol Yun, Jong-Young Lee, Won-Jang Kim, Soo-Jin Kang, Seung-Whan Lee, Cheol-Whan Lee, Jae-Joong Kim, Suk-Jung Choo, Cheol-Hyun Chung, Jae-Won Lee, Seong-Wook Park, Seung-Jung Park*

Park and colleagues evaluated the long-term safety and effectiveness of percutaneous coronary intervention (PCI) compared with coronary artery bypass grafting (CABG) for unprotected left main coronary artery (LMCA) disease. In the 10-year follow-up cohort of contemporaneous bare-metal stents or CABG, there were no differences in the adjusted risks of death or the composite of death, Q-wave myocardial infarction, or stroke, while target vessel revascularization (TVR) was 10 times more likely. Similarly, for the 5-year follow-up of drug-eluting stents (DES) or CABG, there were no significant differences for death or the composite outcome, but the rate of TVR was 6 times higher in the DES group. PCI with stent implantation has similar long-term mortality and major adverse event rates compared with CABG, but higher rates of TVR.

(continued on page A-30)

**ACUTE CORONARY SYNDROMES**

**Prior Aspirin Use Does Not Increase Risk of ACS**

**1376**

*Jonathan D. Rich, Christopher P. Cannon, Sabina A. Murphy, Jie Qin, Robert P. Giugliano, Eugene Braunwald*

While aspirin is clearly beneficial for the treatment of an acute coronary syndrome (ACS), some studies have suggested worse outcomes in those who were taking aspirin prior to their ACS. Rich and colleagues evaluated 66,443 ACS patients from a merged database of TIMI (Thrombolysis In Myocardial Infarction) trials. Prior aspirin users were older, had more coronary risk factors, and were more likely to have previously been diagnosed with coronary artery disease. Unadjusted analyses showed worse outcomes for aspirin users, but after multivariate analysis, there was no difference in total mortality at day 30 or by the last follow-up visit. Prior aspirin use identifies patients with greater baseline risk but does not affect outcomes in ACS patients.

**HEART RHYTHM DISORDERS**

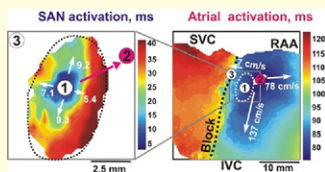
**Optical Mapping of the Human Sinus Node**

**1386**

*Vadim V. Fedorov, Alexey V. Glukhov, Roger Chang, Geran Kostecki, Hyuliya Aferol, William J. Hucker, Joseph P. Wuskell, Leslie M. Loew, Richard B. Schuessler, Nader Moazami, Igor R. Efimov*

The site of origin and pattern of excitation within the human sinoatrial node (SAN) has not been directly mapped. Fedorov and colleagues optically mapped the SAN in preparations from human hearts and reconstructed the 3-dimensional structure of the SAN with histology. Excitation originated in the middle of the SAN, and then slowly spread within the SAN. After a conduction delay within the SAN, the atrial myocardium was excited via superior, middle, and/or inferior sinoatrial exit pathways. The SAN structure was functionally insulated from the atrium by connective tissue, fat, and coronary arteries, except for these exit pathways. This study maps the pattern of excitation within the human SAN, and the exit pathways into the right atrium.

*Editorial Comment: Miguel Valderrábano, Amish S. Dave, p. 1395*



**IMAGING OF CORONARY CALCIUM**

**CAC Score Improves Coronary Risk Prediction**

**1397**

*Raimund Erbel, Stefan Möhlenkamp, Susanne Moebus, Axel Schmermund, Nils Lehmann, Andreas Stang, Nico Dragano, Dietrich Grönemeyer, Rainer Seibel, Hagen Kälsch, Martina Bröcker-Preuss, Klaus Mann, Johannes Siegrist, Karl-Heinz Jöckel, for the Heinz Nixdorf Recall Study Investigative Group*

Erbel and colleagues used data from over 4,000 subjects without known coronary artery disease at baseline to determine net reclassification improvement (NRI) and risk prediction based on coronary artery calcification (CAC) scoring in comparison to traditional risk factors. The baseline risk was categorized into low, intermediate, and high according to the Framingham risk score (FRS) or Adult Treatment Panel III guidelines, and subjects were followed for 5 years. Reclassifying FRS 10-year intermediate-risk (defined as 10% to 20% and 6% to 20%) subjects with CAC <100 to the low-risk category and with CAC ≥400 to the high-risk category yielded an NRI of 22% and 31%, respectively. CAC scoring results in a high reclassification rate in the intermediate-risk cohort.

**IMAGING OF CORONARY CALCIUM**

**CAC Score and 10-Year Coronary Risk**

**1407**

*Suzette E. Elias-Smale, Rozemarijn Vliegenthart Proença, Michael T. Koller, Maryam Kavousi, Frank J. A. van Rooij, Myriam G. Hunink, Erwout W. Steyerberg, Albert Hofman, Matthijs Oudkerk, Jacqueline C. M. Wittman*

Elias-Smale and colleagues followed over 2,000 subjects with a mean age of 70 years for 10 years to examine the effect of coronary calcium on the risk of 10-year hard coronary heart disease (CHD) events. A total of 52% of subjects initially classified as intermediate-risk based on their Framingham risk scores were reclassified by means of coronary artery calcium (CAC) score: to high-risk for a CAC >615 and to low-risk for CAC <50. In a general population of elderly persons at intermediate CHD risk, CAC scoring is a powerful method to reclassify persons into more appropriate risk categories.

*Editorial Comment: Daniel Duprez, p. 1415*

**PRE-CLINICAL RESEARCH**

**Doxycycline Improves Survival in a Mouse Model of Cardiac Proteinopathy**

**1418**

*Hanqiao Zheng, Mingxin Tang, Qingwen Zheng, Asangi R. K. Kumarapeli, Kathleen M. Horak, Zongwen Tian, Xuejun Wang*

Transgenic (TG) cardiac overexpression of missense mutant αB-crystallin (CryABR120G) causes aberrant protein aggregation and cardiomyopathy, recapitulating key features of human desmin-related cardiomyopathy (DRC). Zheng and colleagues treated TG mice with either doxycycline or placebo. Doxycycline treatment significantly attenuated cardiac hypertrophy and improved survival. In cell culture, doxycycline suppressed the formation of both protein aggregates and oligomers. Doxycycline decreases the toxicity of aberrant CryABR120G production and may be useful for human DRC.

*Editorial Comment: Francisco Villarreal, Wilbur Y. W. Lew, p. 1427*