Highlights of the 52nd Annual Scientific Session of the American College of Cardiology—March 30–April 2, 2003

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The 52nd Annual Scientific Sessions of the ACC held in Chicago this spring presented a great deal of new information for cardiovascular specialists. Numerous sessions were held in a variety of topic areas. As a special feature, leaders were selected to present the highlights of nine topic areas at a session held on the last day of the meeting. We are pleased to present here the highlights of the Scientific Sessions as formulated by the experts in these topics.

Myocardial Infarction and Ischemia
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On behalf of my colleagues in the Scientific Program Committee, it is my honor and pleasure to present a few of the highlights among the scientific presentations at the annual Scientific Sessions of the American College of Cardiology, held in March to April 2003, in the category of Myocardial Infarction and Ischemia. I extend my sincere apologies to many fine colleagues whose interesting and important work could not be included in these highlights in view of time constraints.

Immediate reduction in acute myocardial infarction (MI) after implementation of a comprehensive smoke-free ordinance. This study was presented by Dr. Richard Sargent of St. Peter’s Hospital, Helena, Montana, at the Late Breaking Clinical Trials session. Several studies have shown that second-hand smoke increases the risk of fatal and non-fatal cardiac events by as much as 30%. Second-hand smoke rapidly induces endothelial dysfunction and creates a prothrombotic state through activation of platelets and platelet aggregation as well through induction of tissue factor. The goal of the study was to determine the impact of enactment of a smoke-free workplace and public place ordinance on the incidence of acute MI. A municipal ordinance was enacted on July 4, 2002, banning smoking in all public places, such as offices, restaurants, bars, and casinos, in Helena, Montana. In December 2002, the ordinance was suspended because of legal challenges. Investigators tracked all patients admitted to the St. Peter’s Hospital (the primary cardiac care center that serves 65,913 residents in Helena, Montana) with a primary or secondary diagnosis of acute MI at discharge, for six months after implementation of the smoke-free ordinance. Similar data were collected through chart review for a period of four years before the implementation of the ordinance. Investigators also collected data from hospital records of patients outside the Helena area that were not affected by the public ban on smoking. Investigators controlled for long-term trends and seasonal variation. The effect of smoking ban on the incidence of acute MI was examined using multilinear regression analysis. During an average six-month period before the enactment of the ordinance, approximately seven patients with acute MI were admitted per month to
St. Peter’s Hospital, whereas during the average six months after the enactment of the smoking ban, the number of admissions for acute MI per month dropped to approximately three, representing a nearly 60% reduction (p = 0.02). In contrast, there was no significant change in the number of admissions for acute MI among people living outside the smoke-free ordinance zone. The important observations from this population-based study reinforce the relatively large and rapid benefits of implementing clean indoor air legislation on cardiovascular health, further confirming the adverse health impact of second-hand smoke. Therefore, this study provides data of considerable public health value.

Effect of glucose, insulin, and potassium (GIK) on 30-day mortality, infarct size, and ejection fraction in patients with acute MI undergoing primary percutaneous transluminal coronary angioplasty (PTCA). The concept of GIK or the polarizing solution was introduced four decades ago by the Mexican cardiologist, Dimitri Sodi-Pallares, as an antiarrhythmic intervention with the putative mechanism of membrane stabilization. Since its original introduction 40 years ago, this form of treatment has also been evaluated for infarct size and mortality reduction in several small randomized trials which have yielded conflicting results, casting doubt on the efficacy of this intervention. In this study, presented by Iwan C. Van der Horst, investigators from the Netherlands examined the effect of intravenous GIK in combination with reperfusion therapy using primary PTCA on clinical outcome, left ventricular function (using radionuclide ventriculography) and infarct size (using cumulative release of the cardiac enzyme lactic dehydrogenase) in 940 patients with acute MI. Nearly half received a placebo (n = 464), and the other half received GIK (n = 476). Overall, there was no effect of GIK on mortality (4.8% vs. 5.8%; p = 0.5); however, in 856 patients without evidence of clinical left ventricular failure, the mortality was significantly lower with GIK compared with placebo (1.2% vs. 4.2%; p < 0.005). The prevalence of the highest quartile of infarct size was also significantly lower among GIK recipients (22% vs. 29%; p < 0.005), who also tended to have a lower prevalence of left ventricular dysfunction ejection fraction below 30% (13% vs. 17%; p = 0.2). This randomized trial has brought us full-circle back to GIK as a potentially low-cost, low-risk adjunctive intervention in a subset of patients with acute MI undergoing mechanical reperfusion. Although the results appear promising, more studies are warranted to confirm the results presented by these investigators.

The Aggrastat to Zocor (A to Z) trial. This late-breaking randomized clinical trial was sponsored by Merck and Company. It was presented by Dr. Michael Blazing of Duke University Medical Center (Durham, North Carolina). This study was designed in two parts. In part 1 of the study, the investigators compared the clinical outcome of 3,987 high-risk (with electrocardiogram changes or a positive biomarker) patients with acute coronary syndromes, all of whom were receiving aspirin and tirofiban (Aggrastat, a short-acting intravenous IIb/IIIa inhibitor), randomly allocated to weight-adjusted, unfractionated, intravenous heparin (UFH) or to subcutaneous injection of low-molecular-weight heparin enoxaparin at 1 mg/kg/12 h. The allocated heparin treatment was given for 120 h but could be stopped or switched at the discretion of the treating physician. Of the patients, 60% underwent coronary angiography during the hospital admission. The trial was designed as a non-inferiority trial comparing enoxaparin to UFH. The primary end point of death/MI/refractory ischemia occurred slightly more frequently in the UFH group, but this was not statistically significant (9.4% vs. 8.9%; p = 0.23). The overall results fulfilled the prespecified requirements to show that enoxaparin was not inferior to UFH. None of the subgroup analyses revealed any statistically significant differences between UFH and enoxaparin. Secondary end points, while showing a slight trend in favor of enoxaparin, were also not statistically significantly different between the two groups. There was a slight trend towards increased major plus minor bleeding with enoxaparin compared with UFH, but the differences, once again, were not statistically significant (3.1% vs. 2.2%; p = NS). Therefore, these overall results support the equivalence of UFH and enoxaparin in terms of benefits and risks in acute coronary syndrome patients. However, logistic advantages, in terms of feasibility for subcutaneous use, lack of need for dose adjustment, and monitoring with blood tests, would tend to favor enoxaparin over UFH. Part 2 of this trial, which compares early versus late initiation of simvastatin (Zocor) therapy, is likely to be presented later this year at the American Heart Association meetings in November 2003.

Efficacy of a novel P-selectin antagonist, rPSGL-Ig, for reperfusion therapy in acute MI: the RAPSOODY trial. P-selectin is an adhesion molecule that interacts with its ligand P-selectin glycoprotein ligand (PSGL) and mediates the endothelium-leukocytes and platelets-leukocytes interaction. It has been implicated in thrombosis as well as so-called “reperfusion injury.” Reperfusion injury is a putative and highly controversial concept that implicates reperfusion as a source of myocardial damage through the release of oxygen-free radicals and leukocyte-plugging of microvasculature. In experimental studies, a recombinant inhibitor of P-selectin, rPSGL-Ig, has been shown to facilitate thrombolysis, reduce reocclusion, and attenuate “reperfusion injury.” This dose-finding randomized clinical trial, conducted in 598 ST-segment elevation type acute MI patients receiving tissue plasminogen activator for reperfusion therapy within 6 h of onset of symptoms, was designed to determine if rPSGL-Ig would improve the speed of ST-segment resolution (as a surrogate for facilitation of thrombolysis) and reduce infarct size. Three different doses of intravenous rPSGL-Ig (5 mg, 25 mg, 75 mg) were compared with placebo. Continuous ST-segment monitoring was used to assess reperfusion; infarct size was measured by sestamibi single photon emission computed tomography imaging on
Vascular Disease, Hypertension, and Prevention: “From Endothelium to Clinical Events”

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The Vascular-Hypertension-Prevention (VHP) track bridges the best data from vascular biology, thrombosis, cardiovascular epidemiology, hypertension, and lipid-modifying clinical trials and offers insights into optimal treatment of coronary, cerebrovascular, and peripheral arterial disease (PAD). This is a form of “translational medicine” that extends knowledge “from the vascular endothelium to clinical cardiovascular events.” The VHP track has demonstrated that a better understanding of vascular biology can improve cardiovascular health. New insights from clinical practice can guide a search for biologic mechanisms, just as improved understanding of vascular mechanisms can guide improved practice. Abstracts in this arena now represent an increasingly large component (18%) of the Annual Scientific Sessions.

THE FIRST VASCULAR SPOTLIGHT SESSION

In recognition of rapid scientific expansion, broad scope, and clinical relevance of the VHP initiative, the meeting...