Cardiac Function and Heart Failure
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I had the pleasure working with Drs. Jonathan Abrams, Howard A. Cohen, Sudhir S. Kushwaha, and Eric S. Williams to develop the specific contributions in the broad field of cardiac function and heart failure to be presented as original work at these Scientific Sessions. With the assistance of other highly respected reviewers, 1,143 abstracts were graded for selection for only 351 allotted slots on the overall program. As such, many highly ranked abstracts were not able to be accepted for presentation. The accepted abstracts were then assigned into thematically grouped sessions. Although it is impossible to cover the content of these original contributions, a brief overview of the titles of these sessions provides some insight into the active areas of investigation.

There were several sessions devoted to cardiomyopathies with specific sessions for hypertrophic, dilated, and restricted cardiomyopathies. The Program Committee also had one session termed miscellaneous cardiomyopathies. This does not indicate that the Program Committee identified a new form of cardiomyopathy, but does demonstrate that there were many highly ranked abstracts on the issue of cardiomyopathy that did not quite fall into one of the easily recognized clinical patterns. Myocarditis continues to be an important area of investigation.

Contributions concerning cardiac transplantation produced several high-quality sessions concentrating on clinical prognostic factors for both short-term rejection and allo-graft vasculopathy. It is noteworthy that two entire sessions were devoted to the left ventricular assist device, providing a flavor of the advances in this field in managing these highest risk patients.

A substantial proportion of the accepted presentations concentrated on the interface of cardiac function, heart failure, and the elderly. There were particular sessions devoted to physiologic alterations, coronary syndromes, and specific risk factors for failure in the elderly as well as the risk/benefits of pharmacologic therapy in this important segment of our population. My favorite session topic was entitled “Hazards of Being Elderly.” Although I did not attend the specific session, I was assured that an American Association of Retired Persons card was not required for admission.

The number of abstract submissions and acceptances concerning heart failure with preserved systolic function indicates that this is a clear investigatory growth area. Exercise testing as well as exercise training continue to be important investigative and therapeutic areas. Contributions concerning ventricular remodeling continue to provide mechanistic underpinnings for a broad range of areas of cardiac function and heart failure. The prognostic importance of old standards, such as assessments of left ventricular as well as right ventricular ejection fractions, was emphasized in several sessions concerning outcomes of patients with heart failure.

The added prognostic value of a determination of B-type natriuretic peptide (BNP) levels was a clear theme across a strong group of accepted abstracts. Important contributions

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The cardiovascular community does not rest on past accomplishments, and at this Annual Scientific Session of the ACC, the new trials presented at the Late-Breaking Trial Sessions will undoubtedly favorably alter the practice of medicine. The Eplerenone Post-AMI Heart Failure Efficacy and Survival Study (EPHESUS) study, presented by Dr. Bertram Pitt, demonstrated that in high-risk myocardial infarction (MI) patients, those selected for pulmonary congestion, either permanent or transient, as well as reduced left ventricular ejection fraction showed a survival improvement with the use of a selective aldosterone inhibitor, eplerenone. In a well-conducted multicenter, randomized-controlled clinical trial involving over 6,000 patients, a 15% reduction in the risk of death with randomization to eplerenone was reported. Reductions in cardiovascular mortality and hospitalization were also observed, and an intriguing reduction in the risk of sudden death with the aldosterone antagonist was presented. Importantly, these benefits were observed on top of conventional therapy including beta-blocker and angiotensin-converting enzyme inhibitors, indicating that this use of eplerenone offers a true advance in the management of these high-risk patients. The public health implications of EPHESUS were underscored by another abstract presented at this meeting concerning a registry of over 5,000 non-trial acute MI patients (6). Eric Velazquez reported that patients having an MI complicated by left ventricular dysfunction and/or pulmonary congestion constitute approximately 40% of acute MI admissions and that this group has 80% of all hospital MI deaths. Therefore, the advance demonstrated by Dr. Pitt and his colleagues should have a substantial impact in reducing mortality and morbidity during and after MI.

Drs. Arthur Feldman and Michael Bristow presented the preliminary results of the Comparison of Medical Therapy, Pacing, and Defibrillation in Chronic Heart Failure (COMPANION) trial at one of the late-breaking sessions. Patients with advanced heart failure and QRS interval widening were randomized to either optimal pharmacologic therapy, biventricular cardiac resynchronization therapy (CRT), or CRT combined with the cardioverter-defibrillator (CRT-D). This trial was designed to address whether these device modalities would reduce the risk of death and hospitalizations. The preliminary results indicated that the one-year events of death or any hospitalization was reduced by approximately 20% with CRT and CRT-D. Similarly, death or cardiovascular hospitalization and death or heart failure hospitalization at one year were significantly reduced by approximately 30% to 40%. Although the results are preliminary, the COMPANION trial does indicate that in selected patients with severe heart failure (class III and IV) and wide QRS interval, this non-pharmacologic therapy can lead to clinical improvements over and above a currently optimal medical regimen.

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Cardiac function and heart failure are now demonstrating a non-vicious cycle with positive interactions between basic and clinical investigators. It is really becoming difficult to ascertain whether the novel concepts are coming from the trials or more basic studies, or vice versa. The sessions were replete with high-quality studies, which both improved our understanding of pathophysiology and demonstrated the...
translating previous research into better clinical outcomes.

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Cardiac Arrhythmias and Implantable Devices

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Significant original research was reported at the American College of Cardiology 2003 National Meeting in the field of cardiac arrhythmias and implantable devices.

Cardiac resynchronization therapy (CRT) is still a topic of great interest and rapid evolution. The initial results of the Comparison of Medical Therapy, Pacing, and Defibrillation in Chronic Heart Failure (COMPANION) trial were presented. This was the first CRT trial designed to assess mortality. Patients were randomly assigned to optimized medical therapy, biventricular pacing, or biventricular pacing with implantable cardioverter-defibrillator (ICD) capability. The lowest mortality was observed in the group with CRT and ICD (p = 0.002). It also was noted that the difference in response between patients with ischemic cardiomyopathy and those with dilated cardiomyopathy was not significant.

A question often asked about CRT is whether paced patients who have an underlying intrinsic rhythm with a narrow QRS interval receive benefit from an upgrade to CRT. Oezatalay et al. (1) presented data demonstrating that these patients not only have symptomatic improvement with CRT but may demonstrate greater improvement than patients with an intrinsic interventricular conduction delay because of the potential deleterious effects of pacing from the right ventricular apex.

A prospective trial demonstrated that patients with chronic atrial fibrillation receive benefits from CRT similar to those of patients in normal sinus rhythm (2). This further supports the available data from the Multisite Stimulation in Cardiomyopathy (MUSTIC)-Atrial Fibrillation trial.

The assessment of interventricular dyssynchrony by pulsed wave tissue Doppler imaging and strain gauge techniques were shown to have potential for better determining patient selection for CRT, for assisting in positioning the coronary venous lead, and for subsequently optimizing the left ventricular to right ventricular timing differences (3–5).

Cardiac resynchronization therapy implant techniques, both epicardial lead placement (6) and coronary venous lead placement, continue to evolve. Worley et al. (7) reported on a group of 35 patients in whom they performed coronary venous angioplasty that subsequently allowed successful lead placement in 70% of the group who might otherwise have required epicardial lead placement.

Information also emerged about inflammatory markers and neurohumoral changes after CRT. Cardiac resynchronization therapy was shown to lower levels of brain natriuretic peptide, atrial natriuretic peptide, and endothelin-1 (8), and Theodorakis et al. (9) demonstrated lower interleukin-6 values with CRT.

Many clinicians are struggling with the implications of the Multicenter Automatic Defibrillator Implantation Trial-II (MADIT-II) and how to apply these data to the large population of patients who meet these criteria. As of mid-2003, there is no ruling from the Centers for Medicare and Medicaid Services, that is, MADIT-II criteria do not represent a reimbursed criterion. Sharma et al. (10) assessed all their patients who would meet MADIT-II criteria and found that if applied nationally, this would lead to additional implants in approximately 460,000 patients. Other investigators found that MADIT-II results can be generalized to tertiary referral centers (11), and others demonstrated that adding bundle-branch block to the MADIT-II

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