

sions during several meetings of the SNM. These sessions were delivered by leaders internationally recognized in their respective fields. We contributed to the development of educational workshops in numerous ways, including: assisting in developing programs, reviewing abstracts, providing speakers and moderators, and providing travel fellowships for 3 young translational researchers.

The NOC has continued to develop a constructive collaboration with ASTRO, initiated in 2006, and has arranged workshops and satellite seminars during the ASTRO annual meetings. NOC members also gave individual talks during these meetings. NOC presented 1 categorical seminar and 7 continuing education (CE) sessions covering many topics at the SNM Annual Meeting in New Orleans, LA, in June 2008. One of the CE sessions was held in collaboration with the SNM Brain Imaging Council. We were encouraged by attendance and participation in all these sessions.

For the SNM Mid-Winter meeting later this month in Clearwater, FL, the NOC is organizing 2 continuing medical education (CME) sessions: 1 in collaboration with ASTRO and the other in collaboration with the SNM Cardiovascular Council. For the SNM Annual Meeting in June 2009, we will have 1 categorical seminar and 5 CME sessions on a broad range of topics. All of the CE sessions are directed at practicing nuclear medicine physicians, focusing on a number of challenging and emerging topics of interest, whereas the categorical session will focus on the role of molecular imaging in clinical trials. We are quite excited about these educational sessions and are certain that the CE sessions and categorical seminar that cover many aspects of nuclear oncology will generate significant enthusiasm among participants. Developing collaborations with other councils

and societies goes far beyond individual contributions and enhances the common good of the NOC in particular and the SNM in general. The NOC is partially sponsoring the 3rd International Symposium on Radionuclide Therapy and Radiopharmaceutical Dosimetry to be held in Toronto, Canada, in June 2009 alongside the SNM Annual Meeting.

Beginning in 2008, the NOC has been a participant in the SNM Councils and Center of Excellence Internships program. This new program is designed to identify and train future SNM leaders in the structure, governance, and operations of the organization; to prepare individuals for progressive levels of responsibility; and to ensure effective leadership that advances the mission and goals of the organization. An internship position for a single 2-y term as a nonvoting member has been approved for each SNM Council and the Center of Excellence. We have selected Daniel A. Pryma, MD, from the University of Pennsylvania (Philadelphia) for the 2009–2011 NOC Internship Program.

The success of the NOC has been largely owed to those members of the council board who contributed and brought in a wealth of knowledge and ideas. The council's newsletter continues as a main beacon of communication with our members. Membership in the council has increased since the last period, and our goal is to further increase our membership in the coming years. We continue to develop collaborations between the various councils and sections of the SNM. These activities are essential in our efforts to strengthen the common cause of SNM and to nurture the professional aspirations and needs of our membership.

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2008 Nuclear Cardiology Review

Advances in instrumentation and image processing, along with U.S. Food and Drug Administration (FDA) approval of a new pharmacologic stress agent, were the highlights of 2008 in nuclear cardiology. Clinical trials of several radiotracers of interest to the nuclear cardiology community proceeded during the year, while cardiac PET perfusion imaging gained additional acceptance for clinical nuclear cardiology practice.

Rapid Image Acquisition

Several advances in SPECT instrumentation for myocardial perfusion imaging were featured in 2008. The new instruments offer rapid acquisition and improved spatial resolution compared with conventional devices. The D-SPECT Cardiac Imaging System (Spectrum Dynamics; Orangeburg, NY) has an L-shaped gantry adjacent to a reclining patient chair. During imaging, the camera system does not move about the patient. Instead, images are acquired by use of rotating vertical panels equipped with cadmium zinc telluride solid-state digital

detectors housed inside the gantry. The vendor indicates that the camera has a 10-fold improvement in sensitivity and a 2-fold improvement in spatial resolution relative to conventional Anger cameras, permitting acquisition of a gated SPECT myocardial perfusion study in as little as 2 min. The CardArc Camera (CardArc; Canton, MI) system features a circular gantry that forms a 180° arc about a patient sitting in an upright chair. Within the gantry are vertical boards with 4 × 4-cm detectors. The camera uses slit/slat collimation. Interposed between the patient and the detector panels is a thin lead sheet with 6 vertical slots to collimate the photons. During imaging, the sheet rotates back and forth over a distance of about 9 in, with an angular sampling frequency that is significantly better than conventional SPECT cameras. Initial tests by the vendor indicate that a gated myocardial perfusion study can be acquired within several minutes on this system. Siemens Healthcare (Erlangen, Germany) announced the release of IQ-SPECT, a feature that can be used to enhance cardiac imaging on its Symbia cameras. IQ-SPECT uses

focal collimation to image the heart, along with detector orbits centered about the heart. This enables acquisition of gated SPECT perfusion images in as little as 4 min, according to the company.

Commercial vendors also sought to utilize advanced software applications to enhance the quality of myocardial perfusion images (Flash 3D, Siemens; Astonish, Philips; Evolution for Cardiac, GE Healthcare; Wide-Beam Reconstruction, UltraSPECT). In general, the software packages utilize 3-dimensional collimator blur modeling in conjunction with iterative reconstruction to improve signal-to-noise ratios in the reconstructed images. The vendors propose that these changes may permit shorter (“half-time”) acquisition times and/or use of a lower perfusion tracer dose.

New Pharmacologic Stress Agents

In April, the FDA approved regadenoson (Lexiscan; Astellas Pharma US, Inc.; North Deerfield, IL) for pharmacologic stress myocardial perfusion. Regadenoson induces myocardial hyperemia by selectively binding to A_{2A} receptors. Selective A_{2A} receptor binding reduces the severity of untoward side effects. Regadenoson is given as an intravenous bolus over 10 s and is followed by perfusion tracer administration at 30 s. The drug has a high first-pass extraction fraction by coronary arterial receptors, and, therefore, a single dose (0.4 mg) can be used to stress all patients regardless of body weight. This offers advantages for patient throughput in labs that perform high numbers of studies. In clinical studies involving more than 2,000 patients, regadenoson images provided information that was comparable to that provided by images obtained with adenosine stress, with fewer major and less severe side effects. Binodenoson (King Pharmaceuticals, Inc.; Bristol, TN) is another selective A_{2A} receptor agonist that completed Phase III trials but has not been FDA approved.

Clinical Imaging Trials

Phase III clinical trials involving ^{123}I -metaiodobenzylguanidine (^{123}I -MIBG) and ^{123}I - β -methyl-*p*-iodophenylpenta-

decanoic acid (^{123}I -BMIPP) were completed, and Phase II trials were started using an ^{18}F -labeled myocardial perfusion tracer in 2008. In a multicenter trial, SPECT imaging of myocardial sympathetic innervation with ^{123}I -MIBG was conducted in patients with Class II–III heart failure and reduced left ventricular ejection fraction. Differences in ^{123}I -MIBG uptake and clearance may prove useful for prognosis and for identifying subsets of individuals likely to derive a survival benefit from an implantable defibrillator. Results are pending.

Myocardial ischemia impairs fatty acid oxidation, and local disturbances in tissue metabolism persist for hours beyond the duration of a perfusion deficit. Thus, the “memory” of an ischemic event may result in a defect on ^{123}I -BMIPP images, despite normalization of blood flow, and provide a better discriminator of ischemic versus nonischemic chest pain. A Phase III study of patients presenting to emergency departments with chest pain imaged with ^{123}I -BMIPP was completed, and the results are being analyzed. BMS 747158, an ^{18}F -labeled analog of the mitochondrial complex I inhibitor pyridaben, underwent clinical testing as a PET myocardial perfusion tracer. ^{18}F has a half-life of 109.8 min, and, therefore, the tracer could be distributed from regional radiopharmacies to local PET centers for use in a “low dose/high dose” single-day imaging protocol similar to those used for the $^{99\text{m}}\text{Tc}$ -labeled single-photon tracers. Studies can be performed using pharmacologic stress as well as with exercise because of the longer half-life of the tracer.

The advances made in 2008 indicate that nuclear cardiology remains a vibrant and growing field of practice, with even greater clinical promise in the near future.

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From the SNM Molecular Imaging Center of Excellence

As we reach the halfway point of the 5-y Bench to Beside Campaign, I am pleased to report that we have received pledges totaling nearly \$4.9 million, with more than \$250,000 contributed from individual SNM members. In addition, we have made great progress on a number of deliverables to implement the 5-y strategic plan to bring SNM to the forefront of molecular imaging relative to patient care. This past year has seen many achievements, some of which I highlighted on these pages in December. In this column I would like to bring forward a few more key accomplishments from last year.

The Molecular Imaging (MI) Gateway at the 2008 SNM Annual Meeting was once again successful, with interaction by a large number of meeting attendees. A standing-room-only crowd attended the first MI basic science summary session, which captured content not only from the new MI scientific track but also from scientific sessions throughout the entire meeting pro-



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