SOCIETY OF NUCLEAR MEDICINE AND MOLECULAR IMAGING
CARDIOVASCULAR COUNCIL
NEWSLETTER

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Mid-Winter Meeting: Cardiac Sessions Overview

The Cardiovascular Council is pleased to provide you with a meeting preview of the cardiac imaging sessions for the upcoming ACNM/SNMMI Mid-Winter meeting.

There have been some changes to the format this year, and the sessions organized by the CV Council will all occur on Friday. We hope you will attend these detailed sessions designed to provide our members with the most up-to-date scientific, clinical and technical information.

Friday, January 29, 12:45 – 2:45 PM

Dedicated Cardiac SPECT
Sponsored by the Cardiovascular Council and the Computer and Instrumentation Council
Location: Center Ballroom (Hilton Orlando Lake Buena Vista)

This practical session will bring attendees up to date on the most current concepts regarding instrumentation hardware and scanner design, advanced software and reconstruction methods, and unique current applications such as dynamic SPECT. The session was organized by Chi Liu, PhD, and will be moderated by Dr. Liu and James Galt, PhD.

Presentations:
12:45PM - 1:15PM
Overview of Dedicated Cardiac SPECT
James R. Galt, PhD

1:15PM - 2:00PM
Imaging Protocols and Data Analysis for Dedicated Cardiac SPECT
Piotr J. Slomka, PhD

2:00PM - 2:45PM
Dedicated Cardiac SPECT with Pinhole Collimators
Chi Liu, PhD

Friday, January 29, 3:00 PM–5:00 PM

Emerging and Established Roles of Imaging in Heart Failure
Sponsored by the Cardiovascular Council
Location: Center Ballroom (Hilton Orlando Lake Buena Vista)

This expert session will cover the scope and potential of various new and potential clinical applications directed to the use of molecular imaging techniques in the complex setting of heart failure, a debilitating functional and metabolic disorder that requires increasing precision in the use of imaging methods. The session was organized by

Council President Thomas Schindler, MD, and Vice President Robert Gropler, MD; and will be moderated by Vasken Dilsizian, MD and Dr. Gropler.

Presentations:
3:00PM - 3:30PM
Emerging Molecular Imaging Target Concepts
Albert J. Sinusas, MD,FACC, FAHA

3:30PM - 4:00PM
Clinical Relevance of Imaging Sympathetic Innervation
Mark I. Travin, MD

4:00PM - 4:30PM
Dyssynchrony Measurements in Heart Failure: Still Viable?
Prem Soman, MD, PhD

4:30PM - 5:00PM
Advantages and Disadvantages of FDG-PET in Viability Assessment as Compared to Cardiac Magnetic Resonance Imaging.
Robert J. Gropler, MD

Friday, January 29, 6:30 PM–8:00 PM

Emerging Molecular Imaging Approaches in Cardiology
Sponsored by the Cardiovascular Council
Location: Center Ballroom (Hilton Orlando Lake Buena Vista)

This expert session will take you directly to the latest pre-clinical and clinical discoveries in the selective targeting of cardiac and vascular metabolic processes. The session was organized by Council President Dr. Schindler and Albert Sinusas, MD; and will be moderated by Dr. Sinusas and Mark Travin, MD

Presentations:
6:30PM - 7:00PM
Molecular imaging of cardiac and peripheral angiogenesis
Albert J. Sinusas, MD, FACC, FAHA

7:00PM - 7:20PM
Imaging of the "vulnerable" atherosclerotic plaque: an overview
Mehran M. Sadeghi, MD

7:20PM - 7:40PM
Imaging of Sympathetic and Parasympathetic Innervation of the Heart
James T. Thackeray, PhD

7:40PM - 8:00PM
Novel techniques to image molecular angiotensin converting enzyme (ACE) and angiotensin receptors.
Vasken Dilsizian, MD

CVC Intern Update

James Thackeray, PhD

CV Council intern James Thackeray will participate in the Mid-Winter meeting Friday evening session on Emerging Molecular Imaging Approaches, and most recently he was at the podium at the Scientific Sessions of the American Heart Association, where he presented two abstracts in the "New Findings from Basic Science" session on November 10th.

In the interest of providing an update on this fascinating molecular imaging work, he provided his perspective on the two studies this way:

T-4352: The first was an evaluation of a chemokine receptor type 4 (CXCR4)-targeted Ga68-labeled PET tracer (pentixafor) in the setting of myocardial infarction. We were able to demonstrate selective accumulation of 68Ga-pentixafor in the infarct territory of mice early after permanent ligation of a coronary artery, which was effectively blocked by coadministration of the CXCR4 inhibitor AMD3100, and corresponded to a marked increase in CD45+ leukocytes isolated from the left ventricle and analyzed by flow cytometry. We subsequently treated a second group of infarct mice with enalapril, at a dose previously shown to lower the mobilization of CXCR4-rich splenic leukocytes post MI, and measured a reduction in the 68Ga-pentixafor signal compared to untreated MI mice, demonstrating the capacity to discern a therapeutic effect (and validated by flow cytometry).

In addition, we assessed 12 patients at an average of 4d after STEMI and revascularization. We observed heterogeneous uptake in the infarct territory that was independent of infarct size or duration post infarct. In certain patients, there was clearly defined uptake in the infarct territory, but this was not present in all cases. As such, this novel imaging approach identifies regional myocardial CXCR4 up-regulation, and shows inter-individual variability in patients, which may be of relevance to the ongoing development and evaluation of chemokine-targeted therapies. This material is now in press at JACC Cardiovascular Imaging.

T-4355: In the second abstract, we aimed to non-invasively track the homing of endogenous bone marrow-derived cells to the infarct territory early after MI. The project is quite exciting, as it combines sophisticated molecular biology with a practical application of CZT small animal SPECT.

Basically, we transduced donor mouse lineage-negative bone marrow cells with the sodium iodide symporter reporter gene, and transplanted these cells into recipient mice after lethal irradiation of resident bone marrow. We allowed 6-8 weeks of bone marrow repopulation (which we monitored by 99mTcO4- SPECT), then ligated a coronary artery and employed dual isotope SPECT imaging (radioiodine (NIS) and sestamibi (perfusion)) to serially image bone marrow-derived hematopoetic stem cell mobilization in response to the injury. We observe a modest increase in the radioiodine signal within the perfusion defect at 3d post-MI, which recedes by 7d, consistent with the time course of localized inflammation. Post-mortem evaluation confirmed the persistence of the NIS label (and inline GFP reporter) in bone marrow cells. This approach allows for exquisite analysis of the endogenous healing process, and provides direct evidence of the recruitment of hematopoetic bone marrow cells to the infarct territory in a defined temporal and spatial pattern post-MI. The energy peaks for Tc99 (MIBI) and I123 are well defined and distinct images can be obtained. While further ex-vivo testing and refinement of the technique is certainly warranted, the initial results and images bear considerable promise.

-Editor's Note:

The Mid-Winter meeting cardiovascular imaging sessions are a great opportunity to meet Dr. Thackeray and all the cardiovascular experts who will provide their important perspectives on advancing the field. We hope to see you in Orlando!

Save the Date!

Make plans to attend the SNMMI **Annual Meeting**, June 11-15, 2016 in San Diego, CA

Please visit the Cardiovascular Council website for more information and to join!