Building a Foundation for Better PET Utilization

The PET Center of Excellence (PET CoE) is an organizational component within SNM dedicated to all aspects of the development and utilization of PET and PET/CT in the detection and management of disease. The center brings together clinicians, scientists, technologists, and industry leaders to focus on issues that affect the field and to find solutions to meet the needs of its members. From its inception, 2 primary foci of the center have been educational programs and practical issues directly related to PET and PET/CT, including clinical practice, procedure guidelines, and reimbursement.

In January 2008, the PET Utilization Task Force met to discuss current concerns regarding the continuing decrease in PET/CT utilization. As a result of these talks, the task force developed an action plan based on a survey the CoE had conducted earlier regarding specific areas of concern facing the profession. The survey responses revealed that the biggest challenges to increasing PET utilization include reimbursement issues and cost of equipment. Respondents also called for more educational opportunities. From this information, the task force identified 4 discrete areas of importance and established working groups to address them.

The ***Practice Guidelines*** working group, cochaired by George Segall, MD, and James Fletcher, MD, is reviewing practice guidelines of professional organizations to identify areas in which PET/CT is underutilized and to ensure that a focused effort is made to update those guidelines as well as identify any gaps and create guidelines accordingly. An executive summary of PET/CT best practices as well as the various practice guidelines SNM endorses will be available on the PET CoE/SNM Web site to serve as a quick reference for physicians and administrators. The working group will also develop quality measures for PET/CT in the assessment of pulmonary nodules as part of the American Medical Association Consortium project on quality improvement.

The ***Referring Physicians*** working group, cochaired by Homer Macapinlac, MD, and Patrick Peller, MD, conducted an online survey via WebMD of a broad cross-section of referring physicians in order to understand their perceptions of the strengths and weaknesses of PET/CT and any barriers to increasing referrals for PET and PET/CT scans. The data are currently being analyzed, and the results will be used to create an action plan to meet the needs of both referring physicians and those in the PET industry. The plan will be initiated by the end of this year.

The ***Research*** working group, cochaired by Michael Graham, PhD, MD, and David Mankoff, MD, PhD, is reviewing the recent literature to determine cost effectiveness data on PET. The group has identified colorectal cancer—the fourth most common cancer in the United States—as a primary area of focus, because the disease affects both genders and PET has been found to be clinically useful and cost effective in its treatment. Once the literature search has been completed, the working group will develop a standardized research methodology for use in a cost-effective analysis and will work with industry to provide financial support for research in other high-priority areas.

Homer Macapinlac, MD

George Segall, MD

The ***Nuclear Medicine Physicians and Radiologists*** working group, cochaired by Paul Shreve, MD, and Eric Rohren, MD, PhD, is working to expand PET/CT reporting recommendations and guidelines. In addition, Shreve, Terry Wong, MD, and Harry Agress, MD, have written an article on PET/CT reporting that will be published in *Seminars in Ultrasound, CT, and MR*. This paper will inform nuclear medicine physicians about the elements of good reporting. They are currently developing a comprehensive list of programs to teach nuclear medicine physicians to interpret CT and radiologists to interpret PET. A list of these educational opportunities will be posted on the PET CoE Web site later this fall. They will identify other gaps in knowledge where additional programs/educational materials are needed.

The working groups continue to meet via conference call on a biweekly basis as they complete first-year goals. The task force will reconvene in fall 2008 to review the PET Utilization Strategic Plan and determine whether the goals outlined during the first meeting should be changed or updated. In addition to the immediate goals, the PET CoE will introduce the following benefits to members in the upcoming months:

(Continued on page 56N)

transported into the cytoplasm and into the nucleus. They concluded that this successful example shows that laser postionization secondary neutral mass spectrometry can be combined with prompt γ-ray analysis in a screening technique in the early and crucial stages of new drug development or to improve the use of existing drugs.

Molecular Cancer Therapeutics

Molecular Imaging of Intestinal Inflammation

Brewer et al. from the University of California at Los Angeles reported on July 16 ahead of print in *Gastroenterology* on a study examining the biologic basis of tracer uptake in ^{18}F-FDG PET molecular imaging of murine intestinal inflammation. The authors used CT isocontour analysis to standardize quantitation of uptake in longitudinal assessment of immune colitis. Intestinal FDG uptake was compared with histologic scores and with glucose transporter 1 levels in mucosal immune cells. Intestinal tracer uptake was found to be quantitatively correlated with disease activity in mild and severe murine colitis models at all time points examined and was sufficiently sensitive to identify preclinical inflammation. When intestinal inflammation was increased by treatment with piroxicam and decreased with anti-TL1A treatment, ^{18}F-FDG uptake increased and decreased correspondingly. This and other specific findings about cellular response provided a clarification of the cellular basis of ^{18}F-FDG signal in intestinal inflammation, as well as a novel method for standardized quantitation of immune colitis.

Gastroenterology

(Continued from page 46N)

- Community Bulletin Board: A repository in which questions about PET and PET/CT can be posted for review and answered by the PET CoE community. The goal of the bulletin board is to provide communication among individuals in the PET community regarding specific PET- and PET/CT-related questions and/or needs.
- E-Library (Resource Material): A central library for PET- and PET/CT-related articles covering cost effectiveness, procedures, and references. The regularly updated library will be posted on the PET CoE Web site as well as distributed on CD to PET CoE members once each year.
- Cross-Sectional Imaging Atlas: An online PET/CT imaging atlas to help physicians accurately describe and interpret studies. The first datasets will be cross-sectional atlases on head and neck anatomy; lymph nodes in the chest, abdomen, and pelvis; and segmental liver anatomy. They will also contain important PET and CT landmarks for reporting. The datasets will be expanded to include other anatomic regions and disease-specific examples for physicians, technologists, and students.

The work of the PET CoE is made possible by the support of its members. Scientists, physicians, technologists, and health care professionals are encouraged to join the PET CoE and become involved in the many ongoing projects to advance molecular imaging and therapy.

Homer Macapinlac, MD
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