

Alavi Achievements Recognized with de Hevesy Award

Abass Alavi, MD, Professor of Radiology and Chief of the Division of Nuclear Medicine at the University of Pennsylvania Medical Center (Philadelphia), was named as the recipient of the 2004 Georg Charles de Hevesy Nuclear Medicine Pioneer Award. The award was presented on June 20 during the first plenary session at the SNM annual meeting in Philadelphia. Alavi was chosen by Henry Royal, MD, then president of the SNM, for pioneering work that has contributed to the advancement of nuclear medicine world wide.

Each year the SNM presents the de Hevesy award to an individual or individuals for outstanding contributions to the field of nuclear medicine. de Hevesy, widely recognized as one of the originators of the field of nuclear medicine, was the author of several important books and papers on radiochemistry and the recipient of the 1943 Nobel Prize in Chemistry for his investigation of the absorption, distribution, metabolism, and elimination of radioactive compounds in the human body. This research laid the foundation of nuclear medicine as a tool for diagnosis and therapy. "Dr. Alavi's crowning achievement has been his pioneering work in PET," said Royal in presenting the award. "We speak of molecular imaging, and PET specifically, as 'the future,' but he had the foresight to study PET images as early as the 1970s. If you examine nuclear medicine you will find his name. It

is with great pleasure that we extend our congratulations to Dr. Alavi on being awarded this prestigious honor."

Alavi was born in Tabriz, Iran. The example of his paternal grandfather, who practiced herbal medicine, inspired him to enter the medical profession. The first in his family to attend college, Alavi graduated from the University of Tehran Medical School in 1964. He performed his required military service as a member of the Shah's National Health Corps. As the only physician for the people of a small mountain village, he often traveled on horseback to care for illnesses that ranged from measles to anthrax.

In 1966, Alavi arrived in the United States, where he served an internship and residency in medicine at Philadelphia hospitals, earned a hematology/oncology fellowship at Penn, and completed a 1-year residency in radiology at Harvard University. He joined the Penn School of Medicine in 1971 as a research fellow in nuclear medicine and found his true professional calling while training in nuclear medicine under David Kuhl, MD, who introduced him to SPECT and PET and became a lifelong inspiration and friend.

Today Alavi is an internationally recognized expert in advanced imaging techniques and the clinical applications of PET imaging for the detection of cancer and other disorders, including dementia, seizures, cardiovascular disease, and infection. In nuclear medicine, he has enthusiastically pursued interests and activities into areas as diverse as meditation, acupuncture, gene therapy, and angiogenesis, perhaps reflecting his broad experiences early in his medical career in Iran. He has introduced novel techniques that have changed the face of nuclear medicine, ranging from basic clinical procedures to others involving sophisticated technologies, such as tomography.

He has been a pioneer in transitioning PET from research into clinical applications. Along with Kuhl and Dr. Marcus Reivich, he was the first to perform brain tomography and whole-body imaging with ^{18}F -FDG in patients in the early 1970s.

He has maintained a strong commitment to education and trained hundreds of students and physicians from the United States and abroad. At the SNM meeting in Philadelphia, Alavi's group was ubiquitous, participating in more than 60 scientific presentations and poster sessions. "This is all due to the efforts of my wonderful students who work in our group," he explained. "I am very proud of the contributions of these young talents." He is in constant demand as a speaker and has delivered invited lectures in more than 50 countries.

(Continued on page 52N)



Jane and Abass Alavi with the Award winner's mother at the Awards ceremony.

studies using VEGF inhibitors in patients with von Hippel-Landau syndrome and RCC.

Urologic Oncology

Functional Imaging and Radiotherapy Planning

In a study published in the June issue of *Medical Physics* (2004;31:1452–1461), Das et al. from Duke University (Durham, NC) reported on an investigation of the dosimetric feasibility of delivering radiotherapy doses to lung tumors in proportion to ^{18}F -FDG activity measured in tumors on PET. The fact that FDG uptake is correlated with tumor cell proliferation rate, the authors reasoned, implies that this dose delivery strategy

is theoretically capable of providing the same duration of local control at all voxels in tumor. Preliminary work with target dose-delivery calculations based on SPECT maps of normal lung perfusion was outlined and additional considerations described. An intensity modulation optimization methodology was developed to deliver the calculated doses and applied to 2 patients with lung cancer. Dosimetric feasibility was assessed by comparing spatially normalized dose-volume histograms from the nonuniform dose prescription (^{18}F -FDG PET derived) with those from a uniform dose prescription with equivalent tumor integral dose. Although the optimization methodology was capable

of delivering the nonuniform target prescription as easily as the uniform target prescription, in 1 patient the critical structure dosage from the nonuniform dose prescription exceeded dose-volume/function limits and greatly exceeded that from the uniform dose prescription. Adhering to these limits in practice would theoretically entail reduction of the duration of local control. The authors concluded that “even though it appears feasible to tailor lung tumor dose to the FDG-PET activity distribution. . . strict adherence to dose-volume/function limits could compromise the effectiveness of functional image guided radiotherapy.”

Medical Physics

From the SNM Annual Meeting (Continued from page 16N)
Bexxar therapy, all patients showed a response, with 83% showing a complete response. Seventy-two percent of all patients treated are still in complete remission 4.4 years later. Kostakoglu noted that “the results are very encouraging. We feel that further evaluation of the addition of RIT to chemotherapeutic regimens for patients with follicular lymphoma is warranted. This may be the future of treatment with radiolabeled antibodies.”

The use of radiotracers in gene therapy is among the most rapidly growing areas in medical research. Lee et al. from the Case Western Reserve University (Cleveland, OH), the Thomas Jefferson National Accelerator Facility (Newport News, VA) and the University of Virginia (Charlottesville) reported on small animal ^{125}I -FIAU

imaging of the expression of the HSV1-tk delivered into cystic fibrosis (CF) knockout mice. The authors had previously reported on in vivo imaging of radiolabeled DNA complexes containing the therapeutic CF transmembrane conductance regulator gene and monitored its distribution in transgenic CF mice. The HSV1-tk in the current study was delivered in the same fashion. In this study, a custom-built imaging system included both x-ray and planar gamma scintigraphy. The authors found that x-ray images of the mice were readily aligned with scintigraphic images and that radioactivities detected on day 2 indicated that new genetic material was being expressed in the lungs of the mice. According to Lee, “Although the results are preliminary, they are extremely encouraging.” ❀

de Hevesy Award (Continued from page 36N)

Alavi’s contributions to nuclear medicine extend well beyond his own research. He and his wife, Dr. Jane Alavi, have been long-time supporters of educational and research opportunities for students in nuclear medicine. Their names are associated with the Alavi–Mandell Awards, which recognize trainees and young scientists who publish articles as senior authors in *The Journal of Nuclear Medicine*. Their generosity also supports the Pilot Research Grants and the Bradley–Alavi Student Fellowship Awards funded by the Education and Research Foundation (ERF) of the SNM. The Alavis not only continue to contribute to the foundation but are

active in persuading other colleagues to join them in their support of these important endeavors. Most recently, Abass donated time, energy, and funds to his country of origin, Iran, by assisting physicians and scientists from that country in developing a PET center. He is similarly generous with his time: he serves on the Society’s ERF board of directors and is also involved in numerous SNM activities.

“I am honored that I was selected by the Society of Nuclear Medicine for such a distinction,” said Alavi. “I share this recognition with my family, my mentors, and with so many students with whom I have worked over the past 3 decades. This is truly a highlight of my career.” ❀