Although MEK extraction continues to be the major source of $^{99m}TcO_4$, in 1993 the Indian Board of Radiation and Isotope Technology managed to produce approximately 1,500 curies of ^{99}Mo. This, with the creativity of Indian radiopharmaceutical scientists, shows that better days for Indian nuclear medicine lie ahead. Compared to the past two meetings, there was a growth in the number of pharmaceutical research papers presented at the New Delhi meeting. The overall quality of presentations—oral or poster—was high. Young basic scientists and physicians exhibited enthusiasm and skill in tackling local problems. Although to date there is little use of cyclotron-produced radionuclides in India, three major institutions are fighting to obtain cyclotrons and PET facilities.

Looking back to 25 years ago when the country needed to solve the basic problems related to its increasing overpopulation, nuclear medicine's growth there is largely attributable to the remarkable courage of a number of its pioneers, who not only established nuclear medicine in India but promoted its growth and brought it to its current stage. Appropriately, the IASNM recognized 12 of these pioneers at the Silver Jubilee meeting and honored them with a plaque and a monetary award as a token of appreciation for their courage, vision, and outstanding contribution.

Mathew Thakur read a special message by Nobel Laureate Dr. Rosalyn Yalow, in which she reminded those present of the contribution of Indian scientists to international science, and called for cooperation among scientists to serve everyone. The current delegates joined the list of distinguished previous speakers at the annual meetings of the SNM-India, including Drs. Henry Wagner, Richard Reba, Richard Holmes, William Strauss, Merl Loken, Stanley Goldsmith, Alfred Wolf, Wynn Volkest, Michael Zalutsky, Wil Nelp, Gerry DeNardo, Sally DeNardo, and M. Donald Blaufox. The present delegation covered a wide range of nuclear medicine topics, close to the heart of the Indian nuclear medicine community: nuclear medicine management of patients with thyroid diseases; the role of ^{117}mSn in therapy; the use of ^{89}Sr in painful bone metastases; nuclear medicine and cancer biology; cyclotron and PET for developing countries; and the role of peptides and proteins in nuclear medicine. Dr. Larson received the Vikram Sarabhai Oration Award. Dr. Sarabahi had been one of the founding fathers of the Indian Atomic Energy Research Center at Trombay, near Bombay, which by virtue of its ability to provide ^{99m}Tc and other medically useful, reactor-produced radionuclides, promoted the growth of Indian nuclear medicine. The delegates visited the Radiation Medicine Center, one of the country's leading nuclear medicine institutes, in Bombay, and made scientific presentations. They also had the opportunity to make a quick visit to the modern Atomic Energy Research Center.

The goodwill of the delegates created interactions, and the useful dialogue they had with Indian scientists, the understanding of Indian nuclear medicine that they brought back with them, the encouragement their presentations made, and the contacts they established were all worth the time and effort of their mission. Participation at the meeting would not, however, have been possible without the donations of individual IASNM members, the list of which is to long to state here, and the generous financial contributions by ADAC Labs, Abbott Labs, Mallinckrodt Medical, Siemans, DuPont-Merck, Amersham, Squibb Pharmaceuticals, General Electric, and Rainnin Instruments. ■

COMMENTARY

PATIENT CARE AND MARKET SHARE

Henry N. Wagner, MD

AS HEALTH CARE REFORM becomes a major focus of public and political interest, nuclear medicine has the opportunity to take a giant step forward. These are interesting times, and we need to change the way we think about ourselves. We must become autonomous specialists in vivo molecular medicine and seize control of the forces that affect the practice of nuclear medicine. We must become agents, not victims, of change. As the health care system reforms itself, we need to reform ourselves, expressing our ideas and capabilities with passion as well as intelligence.

Regardless of which new health care insurance system evolves, as physicians we will be called upon to document the outcome of our activities. Our new "customers" will be the public and the managers of "accountable health plans" (AHP's), and not just referring physicians. All must be informed about how nuclear medicine procedures can play an important role, so that they are incorporated into effective practice guidelines and comprehensive health care practices.

We cannot wait for things to happen, but must make things

happen. For either the government or multiple "health insurance purchasing cooperatives" (HIPC's), the value and implementations of procedures must be "marketed" to a whole new group of "purchasers." The public must be made to demand nuclear medicine procedures, or they will not get them. Nuclear medicine procedures can be so helpful in achieving desirable outcomes that they cannot fail to be demanded if properly marketed in convenient, cost-effective forms.

We must show how the procedures eliminate or shorten hospital stays or reduce costs in other ways. The orientation of modern medicine toward molecules as the cause of disease is well-suited to the paradigm shift in medicine. We need no longer be a Cinderella in the house of radiology, with radioactive tracers being used only when anatomical imaging, such as CT or MRI, cannot answer the clinical questions being asked. We can move medicine to a higher level which will make it possible to see further over the horizon. Only with radioactive tracers can one examine directly the messages being sent from the hundreds of volumes being written in all organs of the body in the four letters of the DNA alphabet, providing instructions to the machinery of cells as they respond to challenges in the internal and external environment. With in vivo radiotracers, we can decipher the coded messages in the world's most complex communication system, the signals that are translated into behavior.

Clearly, there are problems ahead. Health care reform is likely to make hospitals and physicians even more competitive than at present, and it will become increasingly necessary to show health care system managers how nuclear medicine procedures such as PET and SPECT can make their hospital more competitive in bidding for contracts. Old exclusive contracts to entrenched medical specialties within hospitals will all be up for reconsideration.

Nuclear medicine applies the advances in molecular biology and genetics to patient care. Genetics is in the forefront of modern medicine, because genes direct the production of molecules that keep us alive and well—that, for example, keep us all from getting cancer. Growth hormones and somatostatin tell cells to stop functioning and reproducing. For genetic analysis, peripheral blood lymphocytes can be used to detect and localize aberrant genetic material. DNA from these cells can be subjected to digestion by restriction enzymes and analysis with appropriate probes, but radiotracers let us detect abnormalities restricted to certain parts of the body, such as the brain or heart, or to neoplasms, some of which can be only examined by means of photons that can penetrate the body and be detected externally.

Technology, such as PET, cyclotrons, and SPECT, is expensive, and controlling health costs will become an increasing focus, regardless of type of medical system. Positron emission tomography, in fact, decreases overall costs of health care delivery by providing information such as whether a cancer is operable. Less than 10% of the costs of health care lies in diagnosis and in tests that help plan and monitor effective treatment or eliminate ineffective treatment. We must inform the public that radiotracer studies are not only used for diagnosis but also for planning and monitoring treatment and for prognosis. Ignorance is expensive. Knowledge, used properly, reduces costs.

Nuclear medicine will play an increasing role in medicine as the new paradigms of health care play themselves out. We need to take actions now to achieve autonomy while still cooperating with specialists in other fields, particularly but not limited to oncologists, cardiologists, and neuroscientists. Nuclear medicine must become an autonomous medical specialty related to other specialties by firm bridges. Other specialists will use nuclear technology in their practices and research, but not devote 100% of their efforts to the study of in vivo molecular medicine, as well as be the case of the nuclear medicine specialist. The strength of each specialty must be exerted and then united by nuclear medicine, the most integrative of the biomedical specialties. We are in an era of collaboration and integration. Fragmentation of the field will result if the central medicine core does not flourish.

PET studies need to be simplified, in some cases by the uses of simple detector probes rather than high-cost tomographic scanners. We must continue to ask what degree of spatial resolution is required to solve a given clinical problem. We must determine how quantitative we need to be to solve a given problem. Progress is the dynamic of history. It will soon be no longer acceptable to interpret fuzzy nuclear medicine images at the end of the workday without ever seeing the patient and without interacting with the technologists who perform the studies.

We are traveling together down a road leading to a new nuclear medicine, an autonomous specialty based on the concept that diseases can be characterized by underline molecular abnormalities. Advances in our understanding of intra- and intercellular communication will revolutionize the practice of medicine. Diagnoses will be molecular, treatment will be molecular, and monitoring the response of treatment will be molecular. Underline probes will search out molecular abnormalities within the different organs and parts of organs. Underline probes will correct them.

In the practice of molecular medicine, patients' problems will be viewed as molecular dysfunction, not structural abnormalities (structure and function converge at the molecular level). Molecular "slices of life" provided by nuclear medicine will join histopathology as a way to characterize disease.

The excitement of nuclear medicine remains the best-kept secret in medicine. Medical students often encounter only physicians interpreting studies that they do not fully understand, or who have chosen to enter nuclear medicine for reasons other than the excitement of science. While the students do not know much about nuclear medicine, they are aware of medical politics and economics. They know that what they see, they are likely to get. If nuclear medicine evolves into molecular medicine, then bright, intelligent, innovative, well-trained, far-sighted young men and women will beat the doors down to get into the field. Recently, there has been much discussion about problems in recruiting bright young people into the field. In my opinion, we must change the rules of the game if we want to recruit players. Molecular nuclear medicine can transform medicine the way the automobile and radio transformed life.

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