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AJNR Am J Neuroradiol 1987, 8 (3) 393-395
http://www.ajnr.org/content/8/3/393.citation

ASNR: The Silver Anniversary

Neuroradiology: The Next 25 Years

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The President of the American Society of Neuroradiology (ASNR), Derek Harwood-Nash, asked me as founder of the Society to write an essay on the occasion of its 25th anniversary. I am extremely happy and highly honored to respond to this request but wonder if I can do justice to such an important occasion.

The founding of the ASNR in 1962 was an important step in the development of neuroradiology in the United States and in a broader sense in the development of subspecialization within radiology in this country. Before 1962, Ernest Wood, the director of radiology at the Neurological Institute of New York, was *the only full-time* neuroradiologist in the United States, and after his departure in 1952 (to become Chairman of the Department of Radiology at the University of North Carolina in Chapel Hill) I was appointed director of the Department and again became virtually the only practicing full-time neuroradiologist in the country. This continued for several years and, slowly, partly because of the stimulus engendered by the IV Symposium Neuroradiologicum, which took place in London in 1955, more radiologists in this country became interested in the subspecialty and some of them sought training outside the United States. In the late 1950s, Torgny Greitz, from Sweden, was invited to come to the Mallinckrodt Institute of Radiology at Washington University in St. Louis to spend a couple of years practicing and teaching neuroradiology. At that time, neuroradiology in Europe, particularly in Sweden, was far more developed than in the United States, and training opportunities were available there as well as in England. One reason why neuroradiology was not developed at that time in the United States was that the concept of subspecialization within radiology was really nonexistent and generally opposed by most chairmen of radiology departments [1].

It was obvious that neuroradiology could not grow as a subspecialty until the chairmen of radiology departments around the country accepted the need for such development. The same applied to other subspecialties within radiology.

One important factor that slowed the development of neuroradiology was the need to perform invasive procedures such as angiography, pneumoencephalography, and myelography. Because radiologists were not accustomed to performing invasive procedures, these were carried out by the neurosurgeons and sometimes by the neurology residents in training who wanted to acquire the skills to perform such procedures. The idea that radiologists were capable of developing these skills had yet to be established and put into practice.

A significant development in the early 1960s was the introduction of training programs in clinical neurology financed by the National Institutes of Health through the then National Institute of Neurological Diseases and Blindness (NINDB). At that time there was no opportunity for an individual who had completed full training in diagnostic radiology to obtain post-residency fellowship training because no financing was available from hospitals. Following the model established in clinical neurology, the NINDB provided an opportunity to establish training programs in neuroradiology by offering special training fellowships to individuals who had completed full training in diagnostic radiology. I was fortunate to have been able to establish the first training program in the United States at the Neurological Institute, Columbia Presbyterian Medical Center, in New York; the second was established almost simultane-

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AJNR 8:393–395, May/June 1987 0195–6108/87/0803–0393

ously by Manny M. Schechter at the Albert Einstein Medical Center, also in New York. Shortly thereafter, other training programs were organized. This allowed us to accept qualified individuals for training in neuroradiology for a period of 1, 2, or 3 years. Interestingly, this started slowly but grew rapidly so that by 1963 I already had seven fellows in the program, all of them agreeing to undergo the 2 years of training that I felt was the minimum needed to become a true subspecialist.

I believe the ASNR was the first formally organized subspecialty society within diagnostic radiology in the United States. It became a successful organization early after its founding and has continued to grow steadily throughout its 25 years.

Some of its success can be attributed to the requirements for membership. From the beginning, becoming a member of the ASNR was an achievement in itself, since membership required having had 2 years of training in the subspecialty under a recognized neuroradiologist. These standards have been maintained to the present and have been tightened rather than relaxed. The strict membership requirements have, in my mind, created a homogeneity and fostered a sense of belonging to an achiever group, which has contributed to the success and prestige that the society enjoys. Despite such stringent requirements, the number of members has been increasing, reaching 1,000 in 1986.

It is possible that the ASNR is looked upon as an elite society, and some might oppose it because of that. Certain expressions, such as "splitting or dismemberment of the specialty of radiology" or "disenfranchising of the general radiologist," are often heard. These refer mainly to the development of neuroradiology, but also to other subspecialties within diagnostic radiology. I wonder if these expressions would be used if anyone who is board-certified in radiology could become a member of the ASNR simply by applying. The creation and maintenance of standards of competence is apt to create opposition from groups that do not qualify and to be applauded by those that do. The medical profession is constantly required to elevate its standards if it is to provide the best care possible. I wonder how much opposition followed the creation of the American Board of Radiology in 1935. Some physicians obviously were disenfranchised; and with the establishment of specialty boards in other areas of medicine the accusation of "splitting" or "dismemberment" was undoubtedly voiced.

But how are we to achieve progress and apply it for the common good: by denying that progress has taken place and needs to be incorporated into medical care, or by recognizing those who have agreed through considerable sacrifice to comply with defined requirements? Are we to deny that there has been a great expansion of special knowledge in the field of neuroradiology and that society would demand that these achievements be fully applied in the practice of medicine? And can we be satisfied with the *partial* application of this expanded knowledge on a permanent basis solely to satisfy the desire of the general radiologist? Society would never forgive the medical profession for such behavior; neither is it consistent with what has occurred in surgery, medicine, pediatrics, and pathology. Is not radiology, like those other fields, a specialty of medicine dealing with every organ system in the body?

The Journal

In 1978 the society decided to start a new journal, to be called the *American Journal of Neuroradiology* (*AJNR*). After considerable discussion a decision was made to associate with the *American Journal of Roentgenology* (*AJR*) and the American Roentgen Ray Society. Preparations to publish the first volume began in June 1979, and the first bimonthly issue came out in timely fashion on January 1, 1980. By all standards the *AJNR* can be considered a very successful journal. And it has been a great honor and privilege to be its first editor—even though at times it has not been easy.

Since January 1986, the journal has been wholly owned by the ASNR, but dual publication of some articles in the *AJR* will continue, which I feel is advantageous.

I believe the *AJNR* will continue to prosper as long as high standards are maintained in all aspects of its publication.

The Future

The success of the ASNR has gone beyond my dreams; how can I express my deep satisfaction at having been able to witness this in my lifetime? I am optimistic about the future of neuroradiology and believe that increased recognition and acceptance will undoubtedly take place as time goes on. In spite of my remarks in the preceding paragraphs, I believe some kind of official recognition of special competence or added qualifications will take place in years to come. However, it is my earnest hope that when a decision is made to grant recognition through examination that a *2-year training period*, the same as that required for membership in the ASNR, be instituted as a minimum for admission to the examination. It is the firm opinion of most members of the ASNR that 2 years are necessary to reach the level of competence required in this special field.

Only one thing has worried me in the past and continues to worry me: the relative scarcity of true research by members of the ASNR. This was aptly expressed in an editorial by Murray Goldstein, Director of the National Institute of Neurological and Communicative Disorders and Stroke, entitled "Where Are You? You Are Needed!" [2]. Neuroradiologists, with few exceptions, share with the rest of radiologists a lack of training in basic research. On many occasions in the past I have spoken to the Society about the need to develop research in neuroradiology. Fortunately, technological developments have favored us because the new instrumentation has been applied first to the brain and the spinal cord, allowing neuroradiologists to become "pioneers" in the clinical application of these new imaging techniques: CT, MR, radionuclide scanning, and even sonography, initially. However, we need to go beyond this to develop programs of basic research, to delve into the biology of disease, to study physiology and pathophysiology using our unique imaging methods to elucidate phenomena, and to generate new information.

How can we accomplish this important goal of developing research? The answer is not simple, but I would like to say something about how it can be started. First, we need the determination to promote research carried out by neuroradiologists. Second, we must commit financial support as needed in the beginning, from our clinical funds, to the measure of our ability, to equip laboratories and to support personnel. We must build an infrastructure made up of Ph.D.s and well-trained technologists, and, most important, we must *enthusiastically support research training* for young neuroradiologists. How can we generate the financial support to maintain these young investigators? Perhaps a special fund can be created for this purpose. The Society of Neurological Surgeons has developed a national program for support of research training in neurosurgery. A special fund has been created from financial contributions made mostly by individual members of the society. Once the fund reaches a certain level, the interest derived from it is used *only* to support deserving individuals while they obtain research training in an appropriate environment. More recently the RSNA has established a program to support young investigators; this is progressing well and will undoubtedly grow in the future.

Establishing a research program in a specialty like neuroradiology is not easy. What are suitable areas for true research in neuroradiology? In the last 16 years many developments have assisted the subspecialty by creating a feeling among our peers in other specialties that investigation in pure neuroradiology is alive and well. These developments were in interventional neuroradiology, for which credit goes mostly to radiologists, and in the technological developments in CT and MR mentioned above. This provided a great opportunity to study the clinical utility of these new techniques, which is continuing. But as a group, neuroradiologists can claim little originality in the creation of this new knowledge. CT offers virtually no investigative opportunities at present, but MR does; there is much to be done in this area. Nevertheless, can a retrospective analysis of 10, 50, or 100 cases of a certain disease process with or without CT comparison, with or without contrast media, be considered true research? To be sure, in radiodiagnosis, as well as in earlier medicine and surgery, description and careful analysis of findings have been important and have filled most of the radiologic literature. Perforce, this must be retrospective in the majority of cases. But how long can this go on? In CT this is virtually over; in MR there is still some time to go both for MR alone and for comparison with other techniques, mostly CT.

In MR, however, there is much true research to be carried out in spectroscopy, first on the basic side and then, after laying a solid foundation in this area, on the clinical applications, both with protons and with other nuclei. In addition, there is the broad area of development and application of contrast media for MR imaging.

MR (chemical-shift imaging, spectroscopy, and contrast media development) is an exceedingly important field for us in research. Let us not abandon it to others!

Research in all aspects of cerebral vascular disease is another appropriate area for neuroradiologists. Any research project or program designed to achieve the earliest possible diagnosis of a disease process is appropriate research for a neuroradiologist. This may require a collaborative effort with other specialists and an acquisition of considerable knowledge about the biology of the disease under study.

Prospective (as opposed to retrospective) clinical investigation is a vast area for which the neuroradiologist is well suited, and I hope to see more of this in our journals in the future.

One of the most important research areas in radiology involves the study of contrast media. This applies to contrast media for vascular visualization, myelography, and cisternography, and also to contrast media for MR, which may in the future require a variety of compounds for different organs or disease processes, to contrast media for nuclear medicine, a vast area of basic and clinical research, and possibly to contrast media for other uses.

Basic research is tedious and often disappointing, and clinical application of knowledge acquired through basic research may take a long time. Impatience in research usually goes unrewarded because the investigator is apt to give up too soon. Often the most painstaking research goes nowhere, at times it cannot even be published, particularly if it turns out that it was poorly controlled and poorly planned. But that is precisely the nature of research; that is one of the reasons why *good research training is needed.*

Radiologists have been extremely preoccupied with maintaining clinical skills. They feel that if they leave clinical radiology for one or more years to do research they'll forget everything and lose their trained eye. This is simply not so. Do internists forget clinical medicine, do surgeons lose their skills simply because they spend time in the laboratory? If the surgeon was skillful to start with he'll simply become better through his experience with research. Moreover, after research training, the internist or the surgeon has a solid foundation that allows him to continue to carry out or direct investigations. Sustained basic research requires the creation of an environment and the addition of interested Ph.D.s to the laboratory. Initially, they must be supported from clinical funds, but later enough research support can be attracted to provide most or all of their salaries.

I hope that the next 25 years will see an active increase in the quantity and quality of research by members of our Society, and that research will become progressively more sophisticated and basic with the passage of time. I would like to see special research sessions at the annual meeting. I also hope that the Society is able to establish a special fund to support research training in a manner similar to that done by the Society of Neurological Surgeons and by the RSNA. The Society is most grateful to the Berlex Corporation for its support in creating the ASNR Basic Science Fellowship. This may be a good beginning!

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