Interventional Training for Radiologists

How the advent of endovascular therapy dramatically changed the face of radiology.

BY MARK H. WHOLEY, MD

When the Swedish radiologist Sven Seldinger, MD, first described the percutaneous approach for performing arteriography in the late 1950s, an entirely new subspecialty within radiology was established. At that time, there were no turf issues, and because Seldinger was in fact a radiologist, the procedure was identified within that division. In the 1960s, when Melvin Judkins, MD, and Kurt Amplatz, MD, described catheter configurations that were applicable to selectively catheterizing the coronary arteries for coronary arteriography, the questions then arose that this procedure would be best served by cardiology. The reasons were two-fold, (1) cardiologists were clinicians who had the ability to manage coronary complications, and (2) they controlled the patients. These were two quite significant factors, and in a brief period of time, coronary arteriography was identified as a cardiology procedure.

BRAVE NEW RADIOLOGY

Radiology at that time recognized that credentialing for arteriography, as well as other nonvascular but minimally invasive procedures, was essential if the specialty was to establish its own identity. Some recommended that the training requirements for cardiovascular radiologists should be quite different than the conventional certification requirements. It was discussed that in addition to a clinical year, an optional year in vascular surgery or cardiology would be followed by 2 years in diagnostic imaging, and 1 year as an interventional fellow. There is little correlation between the subspecialty of cardiovascular interventional radiology and the diagnostic training required for mammography, musculoskeletal imaging, and for that matter gastrointestinal or chest imaging. However, at that time, most radiologists believed that they could be competent in all of their divisions, and a separation of the interventional program was never seriously considered.

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The landscape, however, continually changed after the introduction of percutaneous recanalization procedures by Charles Dotter, MD, followed by the coronary stenting procedures by Andreas Gruentzig, MD, and ultimately the widespread application of endovascular stents for iliac and femoral artery occlusive disease. Certainly, the already skillful interventionalists possessed the skills that fostered the foundation and innovation in percutaneous procedures that were being performed under imaging guidance, but they also recognized the need for a credentialing process for those

other physicians interested in endovascular studies. There had already been standards established for radiation safety, as well as an understanding of the biologic effects of radiation and the prevention of radiation injuries during prolonged fluoroscopic procedures. These radiation standards, which were established by the Interventional Radiologic Society, formed the basis for existing FDA, hospital, and state regulatory groups, as well as other medical specialists involved in the practice of all interventional fluoroscopy-related procedures.

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In the late 1980s, the Society for Interventional Radiology leadership group undertook a major coordinated effort to achieve two separate but related goals. The first was establishing interventional radiology training programs to be accredited by the American Council for Graduate Medical Education, and second was the subspecialty certification of vascular and interventional radiology by the American Board of Radiology.

In 1994, the American Board of Medical Specialties authorized the American Board of Radiology to examine and certify in the subspecialty disciplines of vascular interventional radiology. These subspecialty certificates were awarded to those diplomates who qualified and successfully completed the examination in their subspecialty field of interventional radiology. Patient awareness of the subspecialty certification has certainly expanded the identity of interventional radiologists and their role in the expanding minimally invasive procedures.

THE PROGRESS CONTINUES

At the present time, there are more than 5,000 interventional radiologists in the US, with approximately 4,000 of these being fellowship-trained with subspecialty certification. Most of the fellowship training programs are a minimum of 1 year and occasionally include a second. Most programs include didactics in both vascular and nonvascular interventions, with at least two full-time faculty. Teaching ordinarily involves direct supervision of the fellow in all phases of periprocedural management, as well as the cultural and consultative experiences necessary to develop a practice.

The patient population within the training institution should have a broad range of procedures to account for approximately 500 vascular and nonvascular interventions covering the entire range of the specialty. The fellows ordinarily keep a personal log of the cases that are reviewed by the program director. The facilities ordinarily include an established library, adequate laboratory facilities, research facilities, and frequently the ability for experimental animal work for investigative device development. The entire spectrum of vascular procedures is ordinarily included in the training program. In the past, the intracranial and extracranial circulation had not been included, but more recently with the expanded interest by the interventional radiologists in the carotid programs, as well as in stroke management, these areas of interest are also being included in most programs. Certainly, the activity occurring within the endovascular carotid stenting programs have become a necessary part of the training program. Interventional radiologists involved in the carotid stenting procedures obviously have an interest in stroke prevention and in the newer rescue techniques required when embolic events do occur periprocedurally.

Interventional radiologists are trained to work in a variety of imaging modalities and, with the advances occurring in image-guided MR, CT, and ultrasound, an additional array of interventional procedures that include radiofrequency ablation, venous insufficiency and venous disorders, vertebroplasty, venous access management, chemoembolization, uterine fibroid embolization, and the expanding application of endoluminal stent grafts for aneurysmal disease have all been included in the training format. Essentially, all full-time interventionalists are fellowship-trained with subspecialty certification.

Interventional radiologists now clearly realize the need for expanding and developing their own referral services. This is also one of the major efforts being directed by the Society for Interventional Radiology, headquartered in Fairfax, Virginia. The purpose is that with the expansion of the referral practices, the interventional radiologists would obviously have their own admitting privileges, establish out-patient offices, referral clinics, and adopt an ethical marketing program that will establish their identity in the community as the preferred specialists for the management of the increasing numbers of minimally invasive, targeted treatments that are replacing most conventional surgical procedures. ■

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