Who belongs inside the carotid arteries?

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Creation of training and credentialing standards for cervicocerebral angiography, angioplasty, and stenting, published in this issue of Neurology,\(^1\) acknowledges an important reality: the cardiologists are coming. A force of over 4,500 interventional cardiologists,\(^2\) having already moved from the heart to the renal and peripheral arteries, having stood up to cardiothoracic surgeons and won, is rapidly moving into the arteries of the neck and brain, which partisans of the clinical neurosciences considered sacred.

Of over 12,000 stents placed in carotid arteries in the United States last year (Dan Tuden, Boston Scientific, personal communication), approximately one quarter were put in by cardiologists.\(^3\) Why is this happening? Are the carotid arteries large blood vessels, just like so many others in the body, or are they special? Who should be allowed entry into patients’ carotid arteries?

The idea of cardiologists treating carotid disease may at first seem as indefensible as neurologists performing sternotomies, but there are several justifications that must be recognized. First, cardiologists are knowledgeable about atherosclerosis and its manifestations, complications, and treatments. They have become the atherosclerosis experts. Second, interventional cardiologists are expert at angiography, angioplasty, and stenting of other blood vessels that are smaller and technically more difficult to treat than the carotids. Carotid stenting seems easy after dealing with small coronary vessels. Third, they already treat some blood vessels outside the heart, including the renal arteries and peripheral arteries. Are the carotids really that different? Fourth, sometimes the cardiologists are already there. They can document carotid stenosis at the time of coronary angiography (sometimes referred to as “drive-by shooting”) and treat the stenosis at the same sitting, potentially reducing the risk and inconvenience to the patient. Fifth, the pool of cardiologists is about 10 times larger than the pool of neuroendovascular interventionalists, which includes fewer than 500 in the United States.\(^4\) The number of neuroscience-trained interventionalists may be inadequate to meet the needs for stenting if the procedure lives up to its early promise. The medical device companies prefer to market to cardiologists because they see a greater potential for rapid sales growth. Sixth, cardiologists are excellent trialists. They have a long proven record of designing, running, and participating in clinical trials. They are leaders and devoted participants in ongoing and completed trials of devices to treat carotid disease,\(^5\) so they have become some of the first physicians with experience using these new devices. Thus, they may feel entitled to continue to use the devices they have proven efficacious.

Nonetheless, it is difficult to argue against the basic tenets that drive all physicians to years of specialized education: training, experience, and practice improve patient outcomes. The literature supporting this is vast, though sparse for carotid angiography and stenting. Perhaps more compelling is the libidinal bias justifying one’s own life decisions; it would be nearly impossible to acknowledge a lack of benefit to the years of training, with poor hours and little or no pay, that all of us have endured to become specialized physicians. Our prior commitment to specialized training obligates us to believe that it is necessary.

Of course, all commonly used procedures and devices for treating cervical and cerebral vascular disease are new; all specialties could gain experience simultaneously, and the skills already developed by cardiologists may be particularly appropriate. However, the technical aspects of any intervention—be it surgery or another procedure—represent only one of the responsibilities of the treating physician. The treating physician also generally determines who should receive the intervention and manages post-procedural care and complications, at least the urgent ones. Cervicocerebral diagnostic angiography and endovascular procedures are no exceptions. The procedure itself really represents a small and relatively straightforward part of the treatment. However, determining whether a given carotid lesion should be treated is not straightforward and requires knowledge of treatment risk, stroke symptoms, image interpretation, and the natural history if treated.
medically in the setting of many modifying factors. It is difficult to select appropriate candidates for carotid interventions, even for those with neurosciences training. Furthermore, the complications of cervicocerebral interventions are common and complex, and many are not encountered with coronary angiography. For example, distal emboli cause stroke, and treating this requires knowledge and experience with vascular neurology. Hypoperfusion and hyperperfusion of the brain are also common after carotid angioplasty and stenting, and their management requires knowledge of neurocritical care.

It is easy for a partisan to find much to admire in these standards. The partnerships between specialties that made this document possible should also be applauded. Similar partnerships within medical centers are also necessary to provide the best possible care for our patients with carotid, vertebral, and cerebrovascular disease. Disorganization and infighting among the specialties that perform these interventions have already slowed progress in the area. Neurology, neurosurgery, and neuroradiology now must work together to accelerate training of new multidisciplinary specialists, to provide more cooperative working models, and to become more deeply involved in proving that these interventions—and these practitioners—actually improve the outcomes of our patients.

References