The Link between Diagnosis and Therapy

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AJNR Am J Neuroradiol 1999, 20 (1) 3-4
http://www.ajnr.org/content/20/1/3

This information is current as of March 4, 2024.
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One of the first things a radiology resident learns is that studies that will not change therapy are difficult to justify. In other words, if the treating physician will not use the information gained by a diagnostic test, the test probably isn’t worth the expense and risk. Comparing the article by Ertl-Wagner et al in this issue of the American Journal of Neuroradiology (page 37) with Schneider et al’s earlier study (1) reconfirms this nicely. Both articles document the study of repeat imaging in stroke patients. Schneider et al studied stroke patients in 1991 and found that repeat imaging led to discontinued use of aspirin in only 2 (2%) of 82 subjects. Ertl-Wagner et al, however, studied patients from 1995 to 1996 at a major stroke treatment center and found that repeat imaging changed therapy in 137 (58%) of 238 studies.

Why this difference? Most likely it simply reflects the changing therapeutic options and practice patterns for patients with ischemic stroke. By 1996, a number of options became available or accepted that were not available or accepted in 1991. In the United States, rt-PA was approved for the treatment of acute ischemic stroke in June 1996. Although the window for thrombolysis is perhaps too narrow to allow rt-PA use after repeat imaging, the idea that stroke can be treated at all appears to be having an impact. Some therapeutic interventions mentioned in the Ertl-Wagner article (endarterectomy, anticoagulation, hemicraniectomy) have been available for years but now appear to be used more frequently as stroke is more widely perceived as a disease that benefits from aggressive treatment. Many stroke therapies (ie, antipyretic administration for preventing fever) do not need imaging, but other therapies carry risks, and so imaging is undertaken. Other reasons for the differences between the two studies include the possibility of different underlying patient populations, or simply the habits of the treating physicians. In the 1991 study, some physicians did not significantly alter their treatment decisions based on diagnostic imaging tests, and so probably didn’t need to be ordering such tests. By 1996, however, other physicians were frequently using these imaging studies to guide treatment.

The implications for new test techniques are clearly highlighted by these articles. Diffusion/perfusion MR, xenon-CT, CT angiography, CT-perfusion, optical imaging, and other emerging techniques should be widely adopted and used only to the extent that they can change patient management. Given the uncertainty that often accompanies stroke diagnosis, most neurologists welcome techniques that improve diagnostic power. We in neuroradiology must not only provide better diagnostic tools but also tools that improve outcome through better therapeutic choices. More carefully controlled studies, including assessments of the cost-benefit of these new techniques, are sorely needed.