Imaging Idolatry

The Uneasy Intersection of Patient Satisfaction, Quality of Care, and Overuse

MEDICAL IMAGING IS A GROWTH INDUSTRY. A 2008 report by the Government Accountability Office (GAO) noted that in just 7 years, from 2000 through 2006, Medicare spending for imaging more than doubled to approximately $14 billion. Most of the growth was in advanced imaging such as computed tomography (CT) and magnetic resonance (MR) imaging.1 In the particular case of lumbar spine imaging, MR images covered by Medicare increased 307% between 1994 and 2005.2 The GAO linked spending growth, in part, to a shift of more advanced imaging from hospitals into physician offices. It also noted wide geographic variability in the use of imaging, “suggesting that not all utilization was necessary or appropriate.”3-5

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Spine imaging has come under particular scrutiny because both evidence and expert opinion suggest it is overused.3,5 On the one hand, the yield of unexpected findings is low: a 10-year Swedish study estimated that among adults younger than 50 years, 1 in 2500 plain lumbar spine films uncovered something that was not expected on clinical grounds.6 On the other hand, the yield of irrelevant findings is alarmingly high. Studying MR images in adults younger than 60 years with no history of back pain or sciatica, Boden and colleagues7 found that approximately half had bulging discs and degenerative discs and nearly a quarter had herniated discs. In adults older than 60 years, all findings were even more common, and both bulging discs and degenerative discs were almost ubiquitous.7 Similar studies by others have produced remarkably similar results.8,9 Plain radiographs and CT scans among asymptomatic individuals have shown similar high rates of anatomic abnormalities.10,11

PATIENT OUTCOMES

What about patient outcomes? Ultimately, the goal of imaging is to uncover abnormalities that guide the choice of specific therapies, improving patient outcomes. Spine imaging is one of the few areas in diagnostic imaging for which we have multiple randomized trials to test whether this is true. Unfortunately, spine imaging in patients with no indication of underlying systemic disease or major neurologic compromise appears not to improve patient outcomes. A new systematic review12 of these studies identified 6 randomized trials comparing some spine imaging strategy to usual care without imaging. These trials involved 1804 patients and failed to show any advantage of imaging with regard to pain or function, in either the short term or the long term.12

Going yet a step further, we might ask: Could there be any harms associated with spine imaging? Unlike, for example, chest radiography, lumbar spine radiography or CT scanning deliver radiation directly to the gonads, creating a small risk of carcinogenesis or mutagenesis. Beyond this, however, there is evidence that simply knowing about some abnormality in the spine may adversely affect patient behavior. Ash and colleagues13 studied 246 patients with acute back pain or sciatica with MR imaging and randomized them to receive the imaging results or not. Both groups improved over the subsequent year, with similar clinical outcomes. However, self-rated general health improved significantly more in the group that remained blind to the MR imaging results.13 In a British randomized trial, 421 patients with at least 6 weeks of back pain were randomized to receive plain radiography or not. Those who received radiography reported more pain and lower overall health status at 3-month follow-up and were more likely to have seen their physicians during follow-up.14

Finally, in a randomized trial comparing MR imaging with plain radiography as a first imaging test, patients in the 2 groups had equivalent health outcomes, but those receiving MR imaging were more than twice as likely to undergo surgery in the subsequent year.15 The notion that imaging might drive surgery is reinforced by studies of geographic variations, showing that spine surgery rates are highest when spine imaging rates are the highest. This correlation held even if the images specifically associated with surgery were factored out.16 Thus, it appears that imaging, and findings of dubious clinical importance, have the potential to diminish patient self-perceptions of their health and drive potentially unnecessary visits and surgery.

Given the drawbacks of routine imaging, professional guidelines consistently recommend against imaging patients in the absence of clinical “red flags” that suggest systemic disease or major neurologic deficits.17,18 Even when age or other risk factors may increase the risk of underlying systemic disease, strategies that make use of plain radiography and inexpensive laboratory tests uncover most malignant conditions, infections, and inflammatory spondylarthropathies.19-21

PATIENT SATISFACTION

For many clinicians, the conundrum is this: despite the strong evidence against routine spinal imaging, patients
like it and sometimes demand it. Patients are often desperate for an explanation of their pain, and visual evidence is particularly compelling. In the British randomized controlled trial of plain radiography, those in the radiography group were significantly more satisfied with their care, despite having worse outcomes. In the randomized controlled trial of MR imaging vs plain radiography, those in the MR imaging group felt significantly more reassured and were more satisfied with their care, despite no advantage in outcomes. For physicians who want to be patient oriented, whose performance ratings depend on patient satisfaction, or who may be anxious about medicolegal risks, the pressure to order imaging—despite evidence and guideline recommendations to the contrary—can be enormous. In a survey of US physicians, 36% said they would order an MR image for a first episode of acute back pain (2 days) that began during work around the house if the patient was insistent, even after explaining that the test was unnecessary. Thus, patient expectations and convictions in the value of high technology may subvert efforts at judicious and cost-effective use of imaging. Physician anxiety and similar attitudes toward technology may contribute to overuse. When disability claims are involved, attorneys and patients are likely to insist on advanced imaging regardless of clinical guidelines, and the likelihood of discovering an anatomic anomaly is high.

QUALITY IMPROVEMENT

In this context, the National Center for Quality Assurance (NCQA) has taken the bold step of proposing a quality performance criterion based on the overuse of spine imaging. This is unique, as nearly all other quality performance criteria are based on the overuse of spine imaging (NCQA) has taken the bold step of proposing a quality performance criterion based on the overuse of spine imaging. In the randomized controlled trial of MR imaging vs plain radiography, those in the MR imaging group felt significantly more reassured and were more satisfied with their care, despite no advantage in outcomes. For physicians who want to be patient oriented, whose performance ratings depend on patient satisfaction, or who may be anxious about medicolegal risks, the pressure to order imaging—despite evidence and guideline recommendations to the contrary—can be enormous. In a survey of US physicians, 36% said they would order an MR image for a first episode of acute back pain (2 days) that began during work around the house if the patient was insistent, even after explaining that the test was unnecessary. Thus, patient expectations and convictions in the value of high technology may subvert efforts at judicious and cost-effective use of imaging. Physician anxiety and similar attitudes toward technology may contribute to overuse. When disability claims are involved, attorneys and patients are likely to insist on advanced imaging regardless of clinical guidelines, and the likelihood of discovering an anatomic anomaly is high.

In this issue of the Archives, Pham and colleagues examined how well current practice conforms to the NCQA recommendation on limiting the use of lumbar spine imaging. Their study made use of Medicare claims data to examine how quickly imaging is ordered in the face of acute back pain and how often this included CT or MR imaging rather than plain radiography. The authors excluded patients with diagnosis codes indicating neurologic deficits, trauma, cancer, low impact injuries, infections that might lead to osteomyelitis, nonspecific anemias, or constitutional symptoms suggestive of increased infection or cancer risk (eg, fever, weight loss, fatigue, injection drug abuse).

Despite these exclusions, 28.8% of patients received some form of imaging within 4 weeks and a third within 6 months. Among the patients who underwent imaging, 11.8% received CT or MR imaging as the initial study. Patients had more rapid imaging and more advanced imaging if the primary care physician was exposed to patient satisfaction–based financial incentives or worked in large group practices. In contrast, clinical quality-based incentives were associated with less advanced imaging. Other patterns, perhaps predictably, were the reverse of those observed for quality criteria aimed at underuse. Deviations from the recommendations were more common for well-insured and white patients than for Medicaid recipients and patients of minority races.

The authors argue correctly, in my view, that new quality metrics targeted at overuse “may complement current underuse measures and suggest new areas of focus for quality improvement.” This seems especially important in an era when medical costs are rising rapidly, and insurance coverage is shrinking as a result. Indeed, excessive enthusiasm for imaging and other “high-tech” services may account in part for the poor US performance in comparison with other developed countries in regard to both health outcomes and health care costs.

PRACTICE IMPLICATIONS

What are the study’s implications for clinical practice? First, it seems unwise to equate patient satisfaction with better health outcomes, and satisfaction-based incentives may foster overuse. Second, it may be necessary to redouble our efforts at patient education. There is at least a shred of evidence that brief patient education can help to maintain patient satisfaction when imaging is not recommended. Avoiding imaging may itself be part of this education: when radiography was performed for low-risk patients with back pain, expectations for imaging increased. In essence, performing imaging may teach patients that it should be expected. Finally, if quality of care is defined in part by avoiding overuse, we have a challenging task that may require more innovative strategies. That task is to convince our patients that more is not always better.

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Financial Disclosure: None reported.

Funding/Support: Research for this editorial was supported in part by grant 1 UL 1 RR024140-01 from the National Institutes of Health (National Center for Research Resources), a Clinical and Translational Science Award, and by grant 1 ROI AR054912-01A2 from the National Institutes of Arthritis and Musculoskeletal and Skin Diseases.

REFERENCES