It's time to give thoracic MRI its due

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It has become unjustifiable not to offer MRI to patients as a diagnostic problem solver in the thorax.

It is human nature to challenge and forestall change. Progress cannot be stopped forever, though. It is just a matter of when, not what, changes will happen.

The transition to diagnostic use of computed tomography (CT) in the 1970s, for example, did not come easily. There initially were very few educational materials or lectures on the subject of CT. Those radiologists who recognized the modality's value simply had to start doing it and learn on the fly, overcoming many obstacles in the process.

We face a similar circumstance today with respect to thoracic magnetic resonance imaging (MRI). While clinical MRI has been around for decades, the modality's use in the thorax for non-cardiovascular, non-musculoskeletal purposes has been extremely limited. This is not for lack of substantive literature on its benefits, but for lack of adoption by the thoracic imaging community.

Why is this?

As in the case of the early days of CT, one reason may be lack of educational materials. A recent survey of cardiothoracic imaging experts in the Society of Thoracic Radiology highlighted the dearth of resident and fellowship training and educational materials on the subject of nonvascular thoracic MR.[1]

Another reason may be the difficulty of changing popular opinion. Around the time that clinical MRI was introduced, its ability to handle thoracic imaging challenges related to cardiorespiratory motion was limited, resulting in a low opinion of the modality with respect to thoracic imaging. Although breath-hold MRI was possible and already in use for abdominal imaging by the mid-1990s, CT had also progressed significantly. With more rapid helical and multi-detector imaging, and its ability to reformat in virtually any imaging plane, CT could answer most clinical questions.

As a result, thoracic MRI was placed in the dustbin for most purposes. Radiologists simply did not recommend it to referring physicians, who remained unaware of its benefits, and MRI volume remained low. Because there were few cases from which to learn and train, there was a lack of perceived need for

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this modality, discomfort with performing and interpreting thoracic MRI examinations, and reluctance to recommend them. The vicious cycle of thoracic MRI under-utilization continued.

A third reason may be that obstacles to new practice patterns often are raised under the guise of protecting patients or keeping costs under control. For example, opponents will argue that "MRI costs too much, takes too long, cannot evaluate the lung, and is uncomfortable and claustrophobia-inducing."

The fact is that all of these issues can be managed, as they have been for MR imaging of every other body part, including the heart. The fact is that, in addition to mediastinal, pleural, and chest wall mass evaluation, MRI has already demonstrated a tissue characterization role in the evaluation of pulmonary nodules[2] and may increasingly have a role in lung cancer evaluation.[3]

The lack of awareness of MRI's value in the thorax and the lack of openness to new practice patterns have created a vicious cycle of non-utilization. In some cases, it has led to suboptimal clinical management and patient care. Indeed, there has been for too long a high rate of unnecessary thymectomy for thymic cysts and thymic hyperplasia,[4] for which CT falls short diagnostically, but for which MRI is diagnostic.

Indeed, the ever-burgeoning thoracic MRI literature[5] continues to show that when used appropriately, MR imaging can achieve more specific diagnoses than CT and can prevent unnecessary diagnostic intervention and follow-up.[6]

It is time to dust MRI off for use in the thorax. It simply requires interest, motivation, and leadership among radiology groups and institutions, in addition to more educational materials and opportunities. At this point, it is unjustifiable not to offer MRI to patients as a diagnostic problem solver in the thorax. Development of a thoracic MRI practice requires hard work, but it is worth the effort.

In the private practice group where I worked shortly after completing my Women's Imaging and Body Imaging fellowship, I recall recommending a stereotactic core biopsy for indeterminate microcalcifications in a mammography report. Within days, the head of mammography reprimanded me: "We don't perform stereotactic biopsies here," she said. "You should not be recommending this means of diagnostic intervention."

This mammographer was conveying that the risk of losing this patient to another institution trumped any benefit that the patient would receive from undergoing the less invasive procedure. I countered that our group needed to invest in learning and performing the new procedure, and that, in the interim, our patients deserved to be informed of the full range of diagnostic options and should be permitted to go wherever they can receive the best care.

In any domain of life, progress requires the ability to recognize what one does not know, accept that one cannot know everything, and deal with the discomfort and uncertainty that accompanies incomplete knowledge. It requires the motivation to study, learn, and practice; openness to new practice patterns; handing over the reins if necessary; and the humility to ask questions of those who may be junior to us but more current with respect to experience, the literature, and software and hardware innovations.

Only in this way can we succeed and move forward, fostering ever better health and patient care.

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