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MRI in Acute Pulmonary Embolism
A Valuable Alternative in the Assessment of Suspected Acute Pulmonary Embolism

To the Editor:

We congratulate Salaun et al1 for their important article recently published in CHEST (June 2011). The article shows that ventilation-perfusion ratio (V/Q) scanning can be an alternative for the study of acute pulmonary embolism (APE). However, we would like to highlight the importance of MRI in APE diagnosis.

Diagnostic strategies for APE have evolved over the last several decades with the development of new methods. Initially, the time required for an MRI, and the lack of MRI-compatible monitoring devices hindered the broad clinical acceptance of this method. Recently, however, significant technical developments in pulmonary magnetic resonance angiography (MRA) have occurred. Improvements include the use of parallel imaging, time-resolved echo-shared angiography,2 and pulmonary perfusion. These techniques have shortened the acquisition time of MRA, improved spatial resolution, and made it less susceptible to motion artifacts.

A meta-analysis of studies that adopted gadolinium-enhanced MRI for APE used conventional pulmonary angiography as the reference standard. A broad range of sensitivities, from 77% to 100%, was reported, with uniformly high specificities of 95% to 98%.3 For suspected APE, the accuracy of MRI studies that use a state-of-the-art protocol with pulmonary perfusion was both reliable and sensitive compared with multidetector CT (MDCT) scanning.4 The average MRI examination time was approximately 10 min.5 Pulmonary perfusion is the most promising technique for the diagnosis of APE.6 However, even in protocols without pulmonary perfusion, large studies have shown good results using MRI.7

The increased use of MDCT scanning and V/Q scanning has raised concerns about overall radiation exposure in the population and have highlighted the need in the radiology community for optimized scanning protocols.4 MRI does not require ionizing radiation, or iodinated contrast media, and is associated with less renal impairment than MDCT.

Therefore, MRI has some potential advantages over MDCT scanning and V/Q scanning (eg, a radiation-free method, a better safety profile for MRI contrast media, the capability of functional imaging). In certain patient groups, MRI might be considered a valuable alternative for assessing suspected APE.

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Response

To the Editor:

We would like to thank Dr Hochhegger and colleagues for highlighting, relevantly, the potential role of magnetic resonance in pulmonary embolism (PE) diagnosis. However, through September 2009, few studies have investigated MRI in PE diagnosis, and most of them had <20 patients with PE.7 More recently, Stein et al8 performed a large multicenter prospective study—the Prospective Investigation of Pulmonary Embolism (PIOPED) III study—that evaluated the diagnostic accuracy of magnetic resonance angiography (MRA) and thigh vein magnetic resonance venography (MRV) in patients with suspected PE. This study compared MRA and MRV with the standard reference test and showed that in patients with adequate image quality MRA had a sensitivity of 78% and specificity of 99% to detect PE. When MRV was performed along with MRA, the sensitivity increased to 95%. MRA, however, was technically inadequate in 25% of patients (11%-52% according to the center), which led to detection of only 57% of patients with PE and might hamper the broad applicability of the test.

The authors conclude: “Magnetic resonance pulmonary angiography should be considered only at centers that routinely perform it well and only for patients for whom standard tests are contraindicated.”9

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