MOLECULAR IMAGING

Magnetic resonance angiography in pulmonary embolism diagnosis

A multicenter study by the PIOPED III Investigators has shown that magnetic resonance angiography (MRA) can be used to detect pulmonary embolism. The proportion of technically inadequate images obtained with this technique, however, is high, which might hamper the broad applicability of the test.

“Most previous investigations of MRA had fewer than 20 patients with pulmonary embolism,” say the researchers. In their study, 371 patients underwent an MRA test and had

a positive or negative diagnosis of pulmonary embolism obtained from a standard reference test. All except one of these patients also underwent magnetic resonance venography (MRV).

Comparisons with the standard reference test showed that, when technically adequate, MRA had a sensitivity of 78% and a specificity of 99% to detect pulmonary embolism. When MRV was performed along with MRA, the sensitivity increased to 92%. MRA, however, was technically inadequate in 25% of patients, which led to detection of only 57% of patients with pulmonary embolism in the study sample. The proportion of technically inadequate images varied considerably across centers, from 11% to 52%. The researchers, therefore, recommend the use of this approach only at centers with a high rate of technical success and only for subsets of patients for whom other tests are contraindicated.

Harry Büller from the Academic Medical Center in Amsterdam, The

Netherlands, who was not involved in the study, agrees that “a 25% rate of technically inadequate images is a reason for concern” and would not recommend routine use of the technique. “We need to understand why this rate is so high and how to improve it.” Büller adds that although the sensitivity of the technique may seem small, past experience with spiral CT, now the gold standard, shows that “accuracy studies are not always predictive of the results of clinical outcomes studies.” The performance of MRA to detect pulmonary embolism may, in fact, be acceptable. Adding MRV to the test, which would increase cost and time, may, therefore, not be necessary. Overall, the use of MRA in pulmonary embolism diagnosis warrants further investigation.

Joana Osório

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