MSCT boosts diagnosis of perforated appendicitis

January 24, 2008

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CT has proved its worth in the management of appendicitis. Studies of appendiceal perforation using CT are infrequent, however, and restricted to single-slice scanners. The use of contrast-enhanced multislice CT for imaging of the appendiceal wall is a highly accurate technique for the detection of these lesions, according to the investigative team led by Dr. Masahiro Tsuboi, a radiologist at the Tohoku University Graduate School of Medicine in Miyagi.

Tsuboi and colleagues retrospectively evaluated 102 patients with confirmed appendicitis between January 2000 and December 2002 who underwent IV contrast-enhanced CT scanning on a four-slice unit. Two independent observers evaluated five specific findings: appendiceal wall enhancement, abscess, phlegmon, extraluminal air, and extraluminal appendicolith. They recorded the sensitivity, specificity, and accuracy of the specific findings in the diagnosis of perforated appendicitis. The investigators found that MSCT was able to spot appendix perforations accurately in more than 96% of cases based on a particular enhancement defect of the appendiceal wall. They published their results in the January issue of Radiology (2008;246:142-147).

Contrast-enhanced MSCT confirmed a perforated appendicitis in 40 patients, 38 of whom showed an enhancement defect of the appendiceal wall. The sensitivity, specificity, and accuracy values associated with this finding in the diagnosis of perforation were 95%, 96.8%, and 96.1%, respectively.

Although abscesses, extraluminal air, and extraluminal appendicolith did not appear in patients with nonperforated appendicitis, their sensitivities for perforation as shown by CT were only 37.5%, 22.5%, and 32.5%, respectively. Three patients in the nonperforated group and 16 in the perforated group had signs of phlegmon on MSCT. The sensitivity, specificity, and accuracy values of phlegmon in the diagnosis of perforation were 40.0%, 95.2%, and 73.5%, respectively.

The study had limitations, though. Laparoscopic or open surgery could have produced minor injuries that were later erroneously interpreted as perforation. Some sites with perforation may have been missed. And some perforations could have occurred during the 24 hours between CT scanning and surgery.

The use of the cine mode display of transverse thin sections during contrast-enhanced CT scanning, however, consistently depicted a defect that can accurately differentiate perforated and nonperforated appendicitis, the researchers said.

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