Single-phase MSCT aids early pancreatic cancer detection

May 09, 2005

Multislice CT scanning with contrast enhancement can accurately detect pancreatic cancer in just one pass, according to an Italian study published in the April issue of the American Journal of Roentgenology. It can also identify candidates for surgical resection.

Multislice CT scanning with contrast enhancement can accurately detect pancreatic cancer in just one pass, according to an Italian study published in the April issue of the American Journal of Roentgenology. It can also identify candidates for surgical resection.

Dual-phase helical CT can help physicians diagnose and stage pancreatic malignancies accurately. But the technique is not as helpful in predicting which lesions could be surgically removed to boost survival. Patients frequently present with advanced disease at the time of diagnosis, and their chances for curative resection drop accordingly.

Dr. Massimo Imbriaco, a radiologist at the University Federico II of Naples, described in 2002 how a single-phase scan — performed in the opposite direction of standard protocols — could provide superior diagnostic accuracy compared with biphasic scanning. This technique was validated only on single-slice CT, however.

In their latest trial, Imbriaco and colleagues performed single-phase MSCT scanning with contrast in 71 patients with suspected pancreatic carcinoma. They found the new protocol provided accurate diagnosis faster and less expensively than the dual-phase approach, with a lower radiation burden. They also found single-phase MSCT useful in identifying candidates for surgical resection.

A single-phase MSCT acquisition in caudocranial mode might become an alternative to standard dual-phase protocols, the investigators said.

Two experienced abdominal radiologists read the CT scans independently and at random. They characterized pancreatic lesions and determined their viability for resection. Tumor diagnosis using the proposed protocol provided sensitivities of 95% and 94% and specificities of 93% and 90% for the two reviewers.

The same parameters used in the assessment of tumor resection recorded sensitivities of 94% and 89% and specificities of 90% and 78%. Differences in the compared interpretative results between the two radiologists were not statistically significant.

The data acquisition protocol included caudocranial scanning from the inferior margin of the liver to the diaphragm at 4 x 1-mm slice thickness, 1.25-mm reconstruction interval, 120 kVp and 260 to 280-mAs, pitch 1, and a scanning delay of 60 seconds after contrast injection. Researchers used dedicated software/hardware for image interpretation with a volume rendering technique.

Earlier trials using dual-phase scanning had found that MSCT improved early detection and accurate staging of pancreatic cancer through greater parenchymal, arterial, and portal venous enhancement. The Italian study validates these findings but also finds advantages in single-phase over dual-phase imaging in terms of cost-effectiveness and ease of implementation.

The study had several limitations. Radiation dosage did not consider patients' physiologic differences. A 60-second scanning delay after IV injection may not be ideal for detection of hypervascular pancreatic tumors. And the sample of malignancies was too small. Larger studies including only patients with adenocarcinoma should confirm findings, the investigators said.

For more information from the Diagnostic Imaging archives:
- Anatomic, functional imaging collaborate in cancer detection
- Fast CT prompts new look at contrast techniques
- Virtual endoscopy explores bile and pancreatic ducts
- MSCT offers newer, faster applications

Disclosures:

Source URL: