

Noncontrast CT Worked for Appendicitis Diagnosis

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Contributing Writer

CT scanning without oral contrast worked as well or better for diagnosing appendicitis as CT scanning with oral contrast, investigators of a systematic review have reported.

If results of the new review are confirmed through prospective comparative trials, physicians may be able to save hours of time—as well as money and patient dis-

satisfaction—by foregoing use of the contrast agents and using the less burdensome noncontrast CT more commonly, according to Brock A. Anderson, M.D., and his colleagues at the University of Washington, Seattle.

That could help lower the stagnant rate of negative appendectomy, which stands at 15% of the more than 250,000 appendectomies performed each year, and up to 25% in women of reproductive age.

Imaging using oral contrast is the most

prevalent method, but it's often poorly tolerated, delays treatment, and may be responsible for the possible underuse of scans in patients with suspected appendicitis, the investigators said. Rectal contrast is sometimes used, but is uncomfortable and does not always reach the cecum, they added.

The investigators identified 23 studies, most of them prospective, involving almost 3,500 adults who underwent CT scanning for suspected appendicitis with

one of five protocols: CT with rectal contrast, oral contrast, rectal and oral contrast, oral and intravenous contrast, and no contrast (*Am. J. Surg.* 2005;190:474-8).

When they aggregated data for each of the five protocols, the researchers found that specificity, negative predictive value, and accuracy were similar among all scanning modes (specificity ranged from 95% to 98%, negative predictive value from 94% to 99%, and accuracy from 92% to 97%). Sensitivity (83%-97%) and positive predictive value (86%-98%) varied more.

Surprisingly, when the investigators aggregated data into just two groups—CT scans with oral contrast and those without oral contrast (noncontrast and rectal contrast)—they found that CT without oral

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contrast had greater specificity (97% vs. 94%), greater positive predictive value (97% vs. 89%), and better accuracy (96% vs. 92%) than CT with oral contrast.

Scans omitting oral contrast also had similar sensitivity (95% vs.

92%) and the same negative predictive value (96%) when compared with CT scanning with oral contrast, the investigators said.

"The finding that unenhanced CT had superior diagnostic accuracy, compared with scans performed with oral contrast, confounds conventional wisdom," the investigators said.

They suspect that selection bias—the possibility, for instance, that centers reporting noncontrast CT results may already be "expert" scan interpreters from years of experience with contrast—may be involved. So could patient selection issues: 70% of reports detailing results of CT with oral contrast included patients with atypical presentation, compared with only 42% of those reporting noncontrast CT.

Still, the findings "suggest that broader use of CT without oral contrast may be a useful approach to overcome one barrier to the use of diagnostic imaging in patients with suspected appendicitis," they said.

In the meantime, centers should periodically review the accuracy of noncontrast CT scans and "determine center-specific results," advised the investigators.

Scans done without oral or IV contrast, they caution, can be tricky to interpret in thinner patients, in whom the lack of significant retroperitoneal fat can make identification of the appendix and surrounding inflammation difficult.

Without contrast, it is also easier to miss other pathology that may help explain a patient's pain, the investigators noted.

Scans in all reviewed studies were confirmed by pathologic findings or by clinical follow-up evaluation. ■

METABOLIC SYNDROME: THE CLUSTER OF CARDIOMETABOLIC RISK FACTORS¹

- Decreased HDL-C
- Elevated blood pressure
- Elevated triglycerides
- Elevated fasting glucose
- Increased waist circumference (excess adipose tissue)

ADIPOSE TISSUE IS A METABOLICALLY ACTIVE ENDOCRINE ORGAN²

- More than just a storage facility for fat—it has metabolic effects²
- Associated with abnormal endocrine function—impacts secretions of bioactive substances that help regulate lipid and glucose metabolism²
- May lead to development of cardiometabolic risk factors like dyslipidemia, elevated blood glucose, and insulin resistance^{2,3}

A NEWLY DISCOVERED PHYSIOLOGIC SYSTEM

- The endocannabinoid system (ECS) impacts metabolic functions⁴
- Consists of signaling molecules and their receptors, including the cannabinoid receptors [CB₁ and CB₂]^{5,6}

CB₁ RECEPTORS MAY IMPACT LIPID LEVELS AND INSULIN SENSITIVITY⁴

- Located centrally in the brain and peripherally in liver, muscle, and adipose tissue^{4,8}
—ECS overactivity in adipose tissue is associated with decreases in the hormone adiponectin, which may be linked to dyslipidemia, insulin resistance, and intra-abdominal adiposity⁴
- At the center of a cascade of events with potential impact on cardiometabolic risk⁴
- May assist in regulating physiologic processes, eg, lipid and glucose metabolism⁴

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