Computing tomography pneumocolon had a low sensitivity for detecting colorectal neoplasms


QUESTION: How accurate is computed tomography (CT) pneumocolon for detecting colorectal neoplasms in patients scheduled for colonoscopy?

Design
Blinded comparison of CT pneumocolon and colonoscopy.

Setting
1 hospital in London, UK.

Patients
201 consecutive patients (mean age 71 y, 59% women) receiving colonoscopy for detection of colorectal neoplasms. Exclusion criteria were age < 55 years, history of inflammatory bowel disease, and family history of colon cancer in an asymptomatic patient.

Description of test and diagnostic standard
Standard bowel preparation was done for all patients. A CT pneumocolon examination was done in the supine position for all patients and in the prone position for most patients. 2 radiologists reviewed the images and were blinded to any previous colonoscopic results. Colonoscopy was done ≥1 hour after CT pneumocolon by 1 of 12 gastroenterologists blinded to the CT pneumocolon results. Follow up was done for 11 months to identify further neoplasms.

Main outcome measures
Number of colorectal neoplasms. Secondary outcome measures were number of invasive carcinomas and polyps, pain, and patient preference.

Main results
Of the 72 patients (36%) with neoplasms, 13 had invasive carcinomas, 63 had polyps, and 4 had both. 118 polyps were found in 63 patients. CT pneumocolon detected 38% of the patients with neoplasms (table), 100% of the patients with invasive carcinomas, and 29% of the patients with polyps. CT pneumocolon was associated with more pain than colonoscopy (median scores 3 v 1, p < 0.001) and the procedure took more time (33 v 25 min, p < 0.001). 83 patients preferred CT pneumocolon, 90 preferred colonoscopy, and 20 had no preference.

Conclusion
Computed tomography pneumocolon had a low sensitivity for detecting colorectal neoplasms but a high sensitivity for detecting invasive carcinomas.

Table: Characteristics on computed tomographic pneumocolon for patients receiving colonoscopy

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Sensitivity (95% CI)</th>
<th>Specificity (95% CI)</th>
<th>+LR</th>
<th>–LR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorectal neoplasms</td>
<td>38% (26 to 50)</td>
<td>86% (79 to 92)</td>
<td>2.69</td>
<td>0.73</td>
</tr>
<tr>
<td>Invasive carcinoma (IC)</td>
<td>100% (81 to 100)</td>
<td>99% (97 to 100)</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>IC or polyps ≥1 cm, or both</td>
<td>73% (56 to 90)</td>
<td>94% (91 to 98)</td>
<td>12.2</td>
<td>0.29</td>
</tr>
</tbody>
</table>

*Abbreviations defined in glossary; LRs and CIs calculated from data in article.

COMMENTARY

New screening procedures always bring into play the concepts of sensitivity, specificity, and predictive value. Assessment of the new procedures for these features is crucial and should ideally be followed by randomised trials for efficacy in reducing morbidity and mortality. In some instances, higher sensitivity and earlier diagnosis may lead to trade-offs with over detection and increased numbers of false positive results. Alternatively, a new test may not be superior to the current standard. Miao et al have provided a carefully done, well described comparison of the sensitivity and specificity of CT pneumocolon and colonoscopy for the detection of colorectal neoplasia. Their results confirm those of several recent studies by using virtual colonoscopy.4–7 The sensitivity of CT for invasive tumours is certainly good, but the new technology falls short in detecting polyps. Furthermore, colonoscopy was superior to CT pneumocolon for comfort level. The discontinuity of CT pneumocolon depends on the importance one places on polyps and their elimination, something that is believed to have led to a decline in the incidence of colorectal cancer in the US.3

Alfred I Neugut, MD, PhD
Columbia University
New Y ork, USA