

# Diagnosis

## Computed tomography pneumocolon had a low sensitivity for detecting colorectal neoplasms

Miao YM, Amin Z, Healy J, et al. A prospective single centre study comparing computed tomography pneumocolon against colonoscopy in the detection of colorectal neoplasms. *Gut* 2000 Dec;47:832-7.

**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  $\geq 1$  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.

Characteristics on computed tomographic pneumocolon for patients receiving colonoscopy\*

Characteristics	Sensitivity (95% CI)	Specificity (CI)	+LR	-LR
Colorectal neoplasms	38% (26 to 50)	86% (79 to 92)	2.69	0.73
Invasive carcinoma (IC)	100% (81 to 100)	99% (97 to 100)	100	0
IC or polyps $\geq 1$ cm, or both	73% (56 to 90)	94% (91 to 98)	12.2	0.29

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

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### 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.<sup>1-3</sup> 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 disutility 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.<sup>4</sup>

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- 2 Fenlon HM, Nunes DP, Schroy PC, et al. A comparison of virtual and conventional colonoscopy for the detection of colorectal polyps. *N Engl J Med* 1999;341:1496-503.
- 3 Hara AK, Johnson CD, Reed JE, et al. Detection of colorectal polyps with CT colography: initial assessment of sensitivity and specificity. *Radiology* 1997;205:59-65.
- 4 Winawer SJ, Zauber AG, Ho MN, et al. Prevention of colorectal cancer by colonoscopic polypectomy. The national polyp study workgroup. *N Engl J Med* 1993;329:1977-81.