Virtual colonoscopy detected colorectal polyps in asymptomatic patients with average risk of colorectal neoplasia


Clinical impact ratings GP/FP/Primary care ★★★★★ IM/Ambulatory care ★★★★★ Gastroenterology ★★★★★

In asymptomatic patients with average risk for colorectal neoplasia, what is the accuracy of virtual colonoscopy for detecting colorectal polyps?

METHODS

Design: blinded comparison of virtual colonoscopy (VC) with optical colonoscopy (OC).

Setting: 3 medical centres in the US.

Patients: 1233 patients (mean age 58 y, 59% men) with average risk of colorectal cancer. Exclusion criteria included positive result on guaiac based test of stool <6 months before referral; iron deficiency anaemia in the previous 6 months; rectal bleeding or laxatomechearia or unintentional weight loss >4.5 kg in the previous 12 months; OC in the previous 10 years; barium enema in the previous 5 years; history of adenomatous polyps, colorectal cancer, or inflammatory bowel disease; and pregnancy.

Description of tests: VC was done before OC using a computed tomography (CT) protocol wherein pneumoconpolon was produced by insufflating room air through a rectal catheter immediately before scanning. A 4 or 8 channel CT scanner (GE LightSpeed or LightSpeed Ultra, General Electric Medical Systems) generated 2 and 3 dimensional (3 D) endoluminal displays of the colon and rectum while the patient held his or her breath in the supine and prone positions. The 3 D display was used for the initial detection of polyps. OC used a standard commercial video colonoscope inserted to the caecum.

Diagnostic standard: after each segment was inspected, results of VC for that segment were revealed. If a polyp >5 mm in diameter was seen on VC but not on OC, the endoscopist reexamined the segment to create the diagnostic standard (enhanced OC), and to capture false negative results on OC that would otherwise be recorded as false positive results on VC.

Outcomes: sensitivity, specificity, and likelihood ratios.

MAIN RESULTS

554 adenomatous polyps were detected. The prevalence of polyps of diameters ≥6 mm, ≥8 mm, or >10mm, was 13.6%, 6.7%, and 3.9%, respectively. The diagnostic performance of VC at increasing polyp sizes is shown in the table. Sensitivity for initial OC was slightly less respectively. The diagnostic performance of VC at increasing polyp sizes is shown in the table. Sensitivity for initial OC was slightly less than that of VC at polyp sizes ≥8 mm. Of 55 polyps (≥5 mm in diameter) detected by VC but missed by initial OC, 21 (38%) were adenomatous and measured ≥6 mm in diameter. OC was not as sensitive as VC for detecting advanced neoplasms (measuring ≥10 mm) (sensitivity according to the polyp 88.1% v 91.5%). Of the 2 adenocarcinomas identified, VC detected both and initial OC missed 1 (an 11 mm polyp).

CONCLUSION

In asymptomatic patients with average risk of colorectal neoplasia, virtual colonoscopy was sensitive and specific for detecting colorectal polyps.

Abstract and commentary also appear in ACP Journal Club.

Commentary—continued from previous page

All currently accepted tests for colorectal cancer screening—faecal occult blood tests, sigmoidoscopy, double contrast barium enema, and colonoscopy—are effective, but none is ideal. There is always room for another test with a different combination of such characteristics as accuracy, safety, convenience, comfort, cost, and availability. VC has been a promising option, but no rigorous evaluations of polyp detection have been done in people at average risk of colorectal neoplasia. Now there is good information on how well VC detects clinically important polyps in average risk people. 2 strong studies, published within 4 months of each other, came to different conclusions. The study by Pickhardt et al says “virtual colonoscopy … is an accurate screening method … and compares favorably with optical colonoscopy …” The study by Cotton et al says “computed tomographic colonoscopy … is not ready for widespread clinical application.” I believe both are right. They ask different questions and get different answers.

Pickhardt et al ask whether state of the art VC under ideal circumstances can detect polyps in average risk people as well as conventional colonoscopy, the current gold standard. The test they studied had technological features, such as “electronic cleansing” (computer based removal of residual fluid), that are not generally available. Interpretation relied primarily on a 3 dimensional, rather than a 2 dimensional, approach to the detection of polyps, which is not generally used. Also, the 6 radiologists were specially trained, having done >25 (and in some cases >100) such studies. Cotton et al on the other hand, studied the performance of VC under more ordinary circumstances, the kinds of settings where most patients would have the procedure.

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