Editorial

Can CT colonography be an alternative to colonoscopy in patients with incomplete colonoscopy?

Naoki Hosoe^

Center for Diagnostic and Therapeutic Endoscopy, Keio University School of Medicine, Tokyo, Japan

Correspondence to: Naoki Hosoe, MD, PhD. Center for Diagnostic and Therapeutic Endoscopy, Keio University School of Medicine, 35 Shinanomachi, Shinjuku, Tokyo, Japan. Email: nhosoe@z5.keio.jp.

Comment on: Bazoua G, Hassan H, Nawaz M. The value and the future of CT colonography, the emerge of highly competitive diagnostic modality. Dig Med Res 2020;3:43.

Received: 21 May 2021; Accepted: 15 June 2021; Published: 30 June 2021.

doi: 10.21037/dmr-21-48

View this article at: https://dx.doi.org/10.21037/dmr-21-48

Colorectal cancer (CRC) is the third leading primary malignancy in both men and women (1), and countermeasures against CRC have been advanced in worldwide. Colonoscopy (CS) is considered as the gold standard modality for screening of CRC (2), and the usefulness of CS for screening CRC has been reported (3). On the other hand, CS is a relatively invasive procedure, and we have encountered incidents such as perforation or difficulty in performing CS. In addition, insertion of colonoscope may induce patient's pain and discomfort. To overcome these issues, development of the insertion method (4) and new device technology (5,6) have been reported. Although use of sedation reduces patients pain, it causes unexpected adverse event (7). CT colonography (CTC) is one of the options for difficult CS. Although no studies were found evaluating the effectiveness of CTC on CRC incidence, CRC mortality, or both (8), it has a high sensitivity for detecting large polyps in asymptomatic (9) and symptomatic (10) population and is largely superior to that of barium enema, resulting that CTC the best radiological device for surveillance of CRC (11). Another option for screening for CRC is Colon capsule endoscopy (CCE) (12)(13). CCE was first report in 2006 (6), nowadays second-generation CCE has been developed. The first-generation CCE had a mild sensitivity for detecting CRC and polyps (14). The second-generation CCE has a high sensitivity for detecting ≥6 mm polyps (13), approximately 80–95%, as well as CTC. In the incomplete CS cohort, the efficacies of CTC and/or CCE have been evaluated. Copel *et al.* (15) evaluated the efficacy of CTC included 546 patients received CTC after incomplete CS due to the technical difficulty. They reported that CTC detected additional polyps more than 6 mm in size in 13.2% of included patients. Of these patients, 63% received repeat CS, and the positive predictive value (PPV) per patient of CTC for mass lesions, large polyps, and medium polyps was 91%, 92%, and 65%, respectively (15). In a study by Sali *et al.*, 42 patients with a positive fecal occult blood test underwent CTC after incompletion of initial surveillance CS; 50% of these patients showed polyps or mass lesions for which repeat CS was performed. CTC showed a PPV of 87.5% for polyps more than 9 mm (16). In recent meta-analysis, the performance of CTC and second-generation CCE on incomplete CS were evaluated (17). They reported that diagnostic yields of CTC and CCE were 10% (95% CI, 7–15%) and 37% (95% CI, 30–43%) for any size, 13% (95% CI, 9–18%) and 21% (95% CI, 12–32%) for more than 5 mm and 4% (95% CI, 2–7%) and 9% (95% CI, 3–17%) for more than 9 mm polyps (17).

In the issue of digestive medicine research, Bazoua *et al.* evaluated the efficacy of CTC comparing the conventional CS in a cohort of incomplete CS. Moreover, they determined the potential of considering CTC as an alternative to CS in this group, and any risk factors or pathological causes attributed to incomplete CS. They retrospectively analyzed 102 of incomplete CS, and

^ ORCID: 0000-0002-4516-5648.

reported that CTC revealed incidentally 10 pathologies, 4 of clinical significant lesions required further investigation. Their results suggest that CTC may be an alternative to CS in patients with incomplete CS. However, they could not show the non-inferiority of the CTC against CS. Further prospective equivalence studies will be needed.

Acknowledgments

Funding: None.

Footnote

Provenance and Peer Review: This article was commissioned by the editorial office, *Digestive Medicine Research*. The article did not undergo external peer review.

Conflicts of Interest: The author has completed the ICMJE uniform disclosure form (available at https://dx.doi.org/10.21037/dmr-21-48). NH serves as an unpaid editorial board member of *Digestive Medicine Research* from Aug 2020 to Jul 2022. The author has no other conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

References

1. Siegel RL, Miller KD, Jemal A. Cancer statistics, 2020. CA Cancer J Clin 2020;70:7-30.
2. Bibbins-Domingo K, Grossman DC, Curry SJ, et al. Screening for Colorectal Cancer: US Preventive Services Task Force Recommendation Statement. JAMA 2016;315:2564-75.
3. Nishihara R, Wu K, Lochhead P, et al. Long-term colorectal-cancer incidence and mortality after lower endoscopy. N Engl J Med 2013;369:1095-105.
4. Xu X, Ni D, Lu Y, et al. Diagnostic application of water exchange colonoscopy: A meta-analysis of randomized controlled trials. J Int Med Res 2019;47:515-27.
5. Garborg KK, Loberg M, Matre J, et al. Reduced pain during screening colonoscopy with an ultrathin colonoscope: a randomized controlled trial. Endoscopy 2012;44:740-6.
6. Eliakim R, Fireman Z, Gralnek IM, et al. Evaluation of the PillCam Colon capsule in the detection of colonic pathology: results of the first multicenter, prospective, comparative study. Endoscopy 2006;38:963-70.
7. Swei E, Heller JC, Scott F, et al. Adverse Event Fatalities Related to GI Endoscopy. Dig Dis Sci 2021. [Epub ahead of print]. doi: 10.1007/s10620-021-06981-9.
8. Lin JS, Perdue LA, Henrikson NB, et al. Screening for Colorectal Cancer: Updated Evidence Report and Systematic Review for the US Preventive Services Task Force. JAMA 2021;325:1978-97.
9. Pooler BD, Lubner MG, Theis JR, et al. Volumetric Textural Analysis of Colorectal Masses at CT Colonography: Differentiating Benign versus Malignant Pathology and Comparison with Human Reader Performance. Acad Radiol 2019;26:30-7.
10. Pickhardt PJ, Correale L, Delsanto S, et al. CT Colonography Performance for the Detection of Polyps and Cancer in Adults ≥ 65 Years Old: Systematic Review and Meta-Analysis. AJR Am J Roentgenol 2018;211:40-51.
11. Neri E, Halligan S, Hellström M, et al. The second ESGAR consensus statement on CT colonography. Eur Radiol 2013;23:720-9.
12. Houwen B, Dekker E. Colon Capsule Endoscopy: An Alternative for Conventional Colonoscopy? Clin Endosc 2021;54:4-6.
13. Hosoe N, Limpias Kamiya KJL, Hayashi Y, et al. Current status of colon capsule endoscopy. Dig Endosc 2021;33:529-37.
14. Van Gossum A, Munoz-Navas M, Fernandez-Urien I, et al. Capsule endoscopy versus colonoscopy for the detection of polyps and cancer. N Engl J Med 2009;361:264-70.
15. Copel L, Sosna J, Kruskal JB, et al. CT colonography in 546 patients with incomplete colonoscopy. Radiology 2007;244:471-8.
16. Sali L, Falchini M, Bonanomi AG, et al. CT colonography after incomplete colonoscopy in subjects with positive

faecal occult blood test. World J Gastroenterol 2008;14:4499-504.
17. Deding U, Kaalby L, Bøggild H, et al. Colon Capsule Endoscopy vs. CT Colonography Following Incomplete Colonoscopy: A Systematic Review with Meta-Analysis. Cancers (Basel) 2020;12:3367.

doi: 10.21037/dmr-21-48
Cite this article as: Hosoe N. Can CT colonography be an alternative to colonoscopy in patients with incomplete colonoscopy? Dig Med Res 2021;4:21.