For healthcare providers

The adenoma miss rate of blue-laser imaging vs. white-light imaging during colonoscopy: a randomized tandem trial

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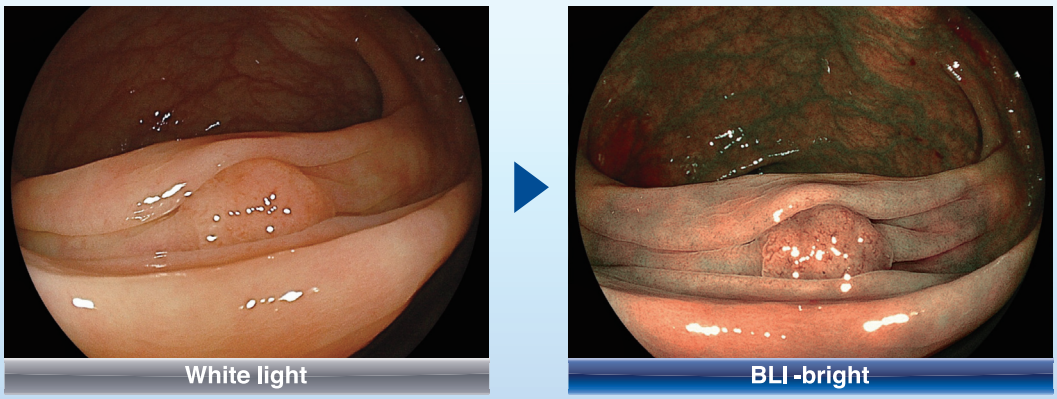
New clinical evidence

Blue-Laser Imaging (BLI) has potential to improve adenoma miss rate compared with conventional white-light imaging (WLI) [1].



Study Center

- Saga Medical School

Background and aim

- Various trials to improve detection of colonic adenomas during colonoscopy have been conducted. Some trials by using IEE (Image Enhanced Endoscopy) are conducted. However a recent meta-analysis failed to demonstrate the superiority of IEE over WLI for detection of colonic adenoma.
- A novel endoscopic system called the "LASEREO system" has been introduced. Yoshida et al suggested that BLI magnification by this laser source could predict histopathological diagnosis and invasion depth of colorectal neoplasm [2].
- The usefulness of BLI for the detection of colorectal neoplasms has not been previously reported*1. In BLI-bright mode, we can get brighter images so that we assume it is suitable for the detection of colorectal neoplasms. This study is aimed at evaluating the advantage of BLI and compare with WLI for detecting colon adenomatous lesions during routine endoscopy.

*1 Author's comment at the time of writing. (This paper was submitted in March 2016)

Study Design

- Study Design: Prospective randomized study
- Registration Aug, 2013-Jan, 2014
- Eligibility Criteria: Positive fecal occult blood and clinical symptoms
- Equipment: Laser Light Source LL-4450, Processor VP-4450HD
  Colonoscope EC-L590ZW, EC-L590WM
- Procedures:

Using a random number table, patients were randomly assigned to examination during withdrawal with either BLI followed by WLI (BLI-WLI group) or WLI followed by WLI (WLI-WLI group) before starting the examination. After cecal intubation, in the BLI-WLI group, the colonoscope was withdrawn from the cecum to the hepatic flexure with BLI (first inspection), and reinserted into the cecum. Thereafter, the colonoscope was withdrawn again with WLI (second inspection). Each colonic segment (ascending, transverse, descending, sigmoid colon, and rectum) was examined twice. In the WLI-WLI group, each segment was examined twice with WLI.

Results

There were 130 patients enrolled. 64 in the BLI-WLI group and 63 in the WLI-WLI group were analyzed.

<Miss rate of adenomatous lesions>

The miss rate of adenomatous lesion in the BLI-WLI group was significantly less than in the WLI-WLI group.
(BLI-WLI 1.6% (0.6% - 4.7%), WLI-WLI 10% (5.8% - 16.7%); p=0.0014)

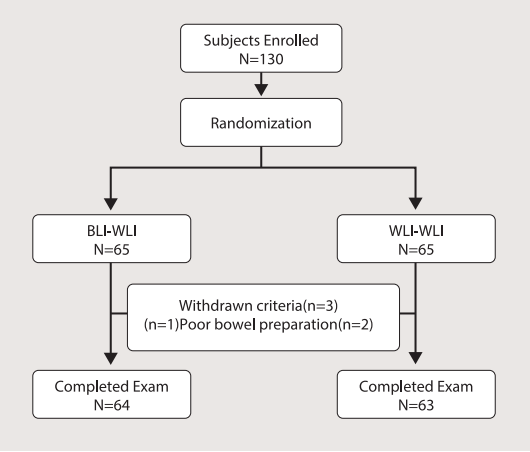
<The total number of adenomatous lesion>

The mean number of adenomas was not significantly different between the groups. The total number of adenomatous lesions in the BLI-WLI group was significantly higher than in the WLI-WLI group.
(BLI-WLI 182, WLI-WLI 120)

<Adenoma Detection Rate*2>

*2 The proportion of patients undergoing screening colonoscopy who have one or more adenomas detected

The detection rate of adenomatous lesions did not differ in the two groups.
(BLI-WLI 62.5%, WLI-WLI 63.5%; p=0.908)



	BLI-WLI group (n=64)	WLI-WLI group (n=63)	P value
Patients with adenomatous lesions	40 (62.5%)	40 (63.5%)	0.908
Total number of adenomatous lesions First inspection Second inspection	 179 182	 108 120	
Miss rate	3/182 1.6% (0.6% - 4.7%)	12/120 10.0% (5.8% -16.7%)	**0.0014**

Conclusion

Colonoscopy using BLI resulted in a lower colon adenoma miss rate than WLI.

Reference

(1) : Shimoda R, Sakata Y, Fujise T, Yamanouchi K, Tsuruoka N, Hara M, Nakayama A, Yamaguchi D, Akutagawa T, Fujimoto K, Iwakiri R.
The adenoma miss rate of blue-laser imaging vs. white-light imaging during colonoscopy: a randomized tandem trial.
Endoscopy. 2016 Nov 14. DOI http://dx.doi.org/10.1055/s-0042-118450

(2) : Yoshida N, Hisabe T, Inada Y et al. The ability of a novel blue laser imaging system for the diagnosis of invasion depth of colorectal neoplasms. J Gastroenterol 2014; 49: 73–80

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