

Computer-aided detection for colorectal neoplasia in randomized and non-randomized studies



The widespread adoption of artificial intelligence (AI) for polyp detection in colonoscopy necessitates a thorough understanding of its benefits and harms. While AI has shown promise in increasing the adenoma detection rate (ADR), potentially reducing colorectal cancer [1], it also raises concerns about increased removal of non-neoplastic polyps. However, conflicting results from recent meta-analyses [2, 3] about the effectiveness of AI in colonoscopy have caused confusion in clinical practice.

One meta-analysis of 21 randomized controlled trials (RCTs) involving 18,232 patients demonstrated that AI-assisted colonoscopy increased the ADR (risk ratio 1.24; 95% confidence interval 1.16–1.33) but also led to a higher rate of non-neoplastic polyp removal compared with standard colonoscopy (mean difference of 0.18 polyps per colonoscopy [0.11–0.26]) [2]. Conversely, another meta-analysis of eight non-randomized studies with 9,687 patients failed to find significant changes in these benefit and harm outcomes, respectively [3].

The debate over the reliability of study designs further complicates the issue. While non-blinded RCTs are generally considered the most trustworthy evidence, they may suffer from artificially controlled environments and unconscious bias favoring the intervention (e.g., the Hawthorne effect) [4]. On the other hand, non-randomized observational studies reflect real-world scenarios but are susceptible to selection bias and lack of adequately controlled groups.

Theoretically, pragmatic RCTs such as randomized health services studies could be the optimal way to measure the real-world effectiveness of medical interventions in which study subjects are less monitored but evenly controlled as compared with traditional randomized trials [5]. Given that we do not have robust results based on such study designs now, a comprehensive consideration of the ben-

efit-harm balance of AI in colonoscopy is needed. Of particular importance is involving patients, physicians, academic societies, and policymakers in evaluating the use of AI to ensure patient-centered care.

Conflict of Interest

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