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Editorial

Real-Time Artificial Intelligence for Colorectal Polyp Detection: Challenges and Perspectives

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In mid-2024, our journal published the first experience in Colombia on the use of artificial intelligence (AI) with a computational method in colonoscopy for polyp detection[1,2]. Its results were compared with the markings of different colonoscopy experts, achieving an accuracy of 0.77, a sensitivity of 0.89, a specificity of 0.71, and an area under the curve (AUC; *receiver operating characteristics)* of 0.87[1].

Now, in real time, Dr. Aponte and his group present a licensed, automatic polyp detection module, which demonstrated a sensitivity of 78.8% and a specificity of 83.1%, with an AUC of 0.73 (95% confidence interval [CI]: 0.686-0.882). Compared to the adenoma detection rate (ADR) of two of the authors, the use of AI improved the adenoma detection rate by more than 10%[3].

Although colonoscopy is the cornerstone of colorectal cancer (CRC) screening, its performance is operator-dependent, and notable variations persist in ADR and the rate of missed lesions. Consequently, computer-aided detection systems based on "deep learning" (AI) are already being used in clinical practice with the goal of alerting in real time to findings that might otherwise go unnoticed[4].

A review of the evidence from clinical experience and meta-analyses of randomized controlled trials (RCTs) concludes that computer-aided detection systems improve ADR and reduce the rate of missed adenomas, particularly for diminutive and sessile serrated lesions. A meta-analysis involving patients with inflammatory bowel disease, which included only prospective RCTs, estimated a relative increase in ADR of nearly 20% and a significant reduction in missed lesions. These benefits are achieved without clinically relevant increases in withdrawal time[5,6].

The European Society of Gastrointestinal Endoscopy (SEED) recently presented an expert consensus that accepts and recommends the use of AI-assisted computer technology for screening and surveillance colonoscopy, due to consistent increases in the detection of adenomas and other small lesions[7]. However, like any new technology, it presents some challenges that must be considered. First, a risk of "deskilling" in lesion detection is suggested: endoscopists accustomed to AI show reduced performance when the assistance is withdrawn, necessitating the design of strategies for its supervised use[8]. Another aspect to resolve relates to false positives, as system adjustments regarding alert sensitivity are required, including reducing fatigue from excessive alarms and, if necessary, generating management protocols for false positives[9].

It is also worth considering that these types of programs can overemphasize the detection of diminutive non-neoplastic polyps, leading to an increase in unneces-

sary polypectomies, which has implications for costs and patient safety[9]. Furthermore, although it is suggested to be a cost-effective technology, whether the increase in ADR translates into a reduction in interval colorectal carcinomas remains to be established[10].

Currently, AI has progressed from a dream come true to a tool with a positive impact on ADR. Its routine implementation will depend not only on the acquisition of programs with high computational technical standards but also on professional training programs that emphasize that AI does not replace endoscopic technique and quality (insufflation, cleansing, retroflexion, withdrawal times). Finally, it is essential to insist on clinical responsibility, as the final decision always remains a human one[11].

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