Adenoma Detection Rate using LCI vs. white light colonoscopy both with and without the use of Artificial Intelligence: A Prospective Study in a nonacademic center in Latin America

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INTRODUCTION

- The adenoma detection rate (ADR) is a strong predictor of cancer prevention. The use of artificial intelligence could increase the detection of colorectal polyps.
- The Computer-Aided Polyp Detection systems (CADe) have shown high accuracy in polyp detection when retrospectively applied to endoscopy videos or images, but their live performance is still under scrutiny.
- Linked Color Imaging (LCI) is a modern image-enhancing technology, its use along with artificial intelligence could be another tool in the detection of precancerous lesions.

METHODS

- A prospective observational study was conducted on 637 subjects undergoing screening colonoscopies, follow up colonoscopies, or work-up from a fecal occult blood test, from January 2021 through June 10th, 2022, in a nonacademic center in the Dominican Republic.
- Colonoscopies performed during 2021 did not use the CADe technology, while patients in 2022 were exposed to the CADe technology, in addition, each patient was alternatively assigned to either LCI or white light colonoscopy.
- Two endoscopists performed the procedures during these two years. The primary outcome evaluated was the ADR using LCI vs. white light colonoscopy both with and without the use of artificial intelligence. Secondary outcomes were polyp detection rate (PDR) and average withdrawal time.

RESULTS

- The ADR in patients not exposed to CADe (2021) was 56.6%, while patients exposed to CADe (2022) presented an ADR of 61%.
- PDR in 2021 was 72.3%, and in 2022 the result was 70.6%.
- The average withdrawal time in 2021 was 13 minutes and 14 minutes in 2022.
- When it comes to the use of LCI and white light without the use of AI, the ADR with LCI was 62%, while the use of white light colonoscopy resulted in an ADR of 52.9%.
- The ADR in patients exposed to LCI with AI was 61.1%, while patients exposed to white light with AI, ADR of 61%.

	LCI and White Light without AI	LCI and White light with AI	LCI without AI	LCI with AI	White light without AI	White light with AI
ADR	56.6%	61%	61%	61.1%	52.9%	61%
PDR	72.3%	70.6%				

DISCUSSION

- ADR calculated were higher than the average considered for a high-quality colonoscopy, both with and without the use of artificial intelligence.
- ADR was higher with LCI when compared to white light colonoscopy.
- When comparing the use of both technologies, there was a 4.4% increase in ADR when using AI, which may not seem as much, but it is known that for every 1% increase in ADR there is a 3% reduction on CRC, an increase of 4.4% means a 13.4% reduction of CRC.
- There was a bigger increase in ADR with AI with white light when compared to LCI which means that using AI will most likely have a bigger impact in white light than LCI.
- Further studies are still needed to assess these new technologies and their effect on colonoscopy and polyp detection.