https://doi.org/10.22516/25007440.1236

Editorial

Artificial intelligence: the future made reality

David B. Páramo-Hernández,[1*] Ricardo A. Cepeda-Vásquez.[2]

OPEN ACCESS

Citation:
Páramo-Hernández DB, Cepeda-Vásquez RA. Artificial intelligence: the future made reality. Revista. colomb. Gastroenterol. 2024;39(1):131-132. https://doi.org/10.22516/25007440.1236

[1] Editor and Director, Revista Colombiana de Gastroenterología. Gastroenterologist, GutMédica, Hospital Santa Clara. Bogotá, Colombia.
[2] Surgeon, Subspecialist in Gastroenterology and Digestive Endoscopy, Instituto de Enfermedades Digestivas. Bogotá, Colombia.

***Correspondence:** David B. Páramo-Hernández. paramo.david@gmail.com

Received: 13/06/2024
Accepted: 14/06/2024

The significant advancements in artificial intelligence (AI) in recent years have established it as a crucial innovation in medicine and gastroenterology, with the potential to transform medical practice[1]. AI's remarkable capability to analyze complex algorithms and develop self-learning technologies—incorporating new concepts similarly to human learning—can enhance diagnostic accuracy, streamline management flowcharts, stratify risks, and optimize treatments, thereby facilitating personalized and efficient care[1]. One of the most promising applications of AI in gastroenterology and digestive endoscopy is its immense ability to analyze endoscopic images with speed and precision.

Initial applications included computer-aided diagnosis (CAD) for the detection, differentiation, and characterization of neoplastic and non-neoplastic polyps[2]. A randomized controlled trial involving 1058 patients demonstrated a significant increase in adenoma detection rates with the use of CAD compared to standard colonoscopy (29% vs. 20%, $p < 0.001$), with higher detection rates of diminutive adenomas (185 vs. 102, $p < 0.001$) and hyperplastic polyps (114 vs. 52, $p < 0.001$). There was no statistical difference in the detection of larger adenomas[2]. Local experiences, such as those of Dr. Gómez and colleagues published in our journal[3], contribute to understanding how AI techniques can improve the accuracy of endoscopic image interpretation, which often suffers from significant interobserver variability, as also noted in a previous issue[4].

In this one, we publish the article by Dr. Martín Gómez and colleagues[5], winner of the ACADI 2023 National Research Award in Gastroenterology. This article exemplifies how AI can contribute to the quality audit of upper digestive tract endoscopy through an AI-based endoscopic exploration protocol of the stomach. This protocol allowed the identification of gastric areas, achieving a sensitivity of 85.5% and a specificity of 98.8% in interpreting the 13 specific areas described. These results demonstrate AI's potential effectiveness as a valuable tool for assisting endoscopists in performing a thorough and meticulous examination of the entire stomach.

The development of AI systems that can assist endoscopists in real-time during procedures can provide instant analyses of endoscopic images, highlight areas of interest, and suggest differential diagnoses. By integrating AI into clinical practice, endoscopists can improve their efficiency and accuracy, leading to better patient outcomes[6,7].

High-quality datasets and robust algorithms are indispensable for this integration. This necessitates close collaboration among physicians, researchers, and IT experts. However, AI algorithms and their applications require further studies and validation. Additionally, more clinical data are needed to demonstrate their efficacy, value, and impact on patient

care and outcomes. Finally, cost-effective AI models and products must be developed to enable physicians, clinics, and hospitals to incorporate AI into daily clinical use.

We must view the use of AI as a tool to further improve clinical outcomes for patients with gastrointestinal diseases while also considering the risks of its potential misuse[7].

REFERENCES

1. Kaul V, Enslin S, Gross SA. History of artificial intelligence in medicine. Gastrointest Endosc. 2020;92(4):807-812. https://doi.org/10.1016/j.gie.2020.06.040
2. Wang P, Berzin TM, Glissen Brown JR, Bharadwaj S, Becq A, Xiao X, et al. Real-time automatic detection system increases colonoscopic polyp and adenoma detection rates: a prospective randomised controlled study. Gut. 2019;68(10):1813-1819. https://doi.org/10.1136/gutjnl-2018-317500
3. Gómez Zuleta MA, Cano Rosales DF, Bravo Higuera DF, Ruano Balseca JA, Romero Castro E. Detección automática de pólipos colorrectales con técnicas de inteligencia artificial. Rev. colomb. Gastroenterol. 2021;36(1):7-17. https://doi.org/10.22516/25007440.471
4. Cepeda Vásquez RA. Inteligencia artificial en la detección de pólipos colónicos: qué dicen los estudios. Rev. colomb. Gastroenterol. 2021;36(1):2-6. https://doi.org/10.22516/25007440.726
5. Gómez M, Bravo D, Ruano J, Jaramillo M, González F, Romero E. Sistema de auditoría automática para la exploración endoscópica del estómago con Inteligencia Artificial – Gastro UNAL: Gastroendoscopy UNit for Automatic Labeling. Rev. colomb. Gastroenterol. 2024;39(2):133-145. https://doi.org/10.22516/25007440.1163
6. Okagawa Y, Abe S, Yamada M, Oda I, Saito Y. Artificial Intelligence in Endoscopy. Dig Dis Sci. 2022;67(5):1553-1572. https://doi.org/10.1007/s10620-021-07086-z
7. Ali H, Muzammil MA, Dahiya DS, Ali F, Yasin S, Hanif W, et al. Artificial intelligence in gastrointestinal endoscopy: a comprehensive review. Ann Gastroenterol. 2024;37(2):133-141. https://doi.org/10.20524/aog.2024.0861