Artificial Intelligence Could Be the Key to Improving the Accuracy of Colonoscopies

A novel artificial intelligence device known as GI Genius could detect precancerous polyps that clinicians may otherwise overlook.

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Earlier this month, the U.S. Food and Drug Administration (FDA) authorized Medtronic and Cosmo Pharmaceuticals to start marketing its novel artificial intelligence (AI) device, the GI Genius, that improves the quality of colonoscopies by detecting precancerous polyps that clinicians may otherwise overlook if they are flat or are located in areas of the colon that are difficult to see with an endoscope.

According to a systematic review and meta-analysis of 43 international publications, 13 of which were conducted in the United States, many cases of colorectal cancer can be attributed to polyps and adenomas that are not detected during routine screenings. The study found that 26% (95% CI: 23%-30%) of adenomas are missed during colonoscopies as well as 27% of serrated polyps (95% CI: 16%-40%). GI Genius is one of a few devices cleared by the FDA to aid in colonoscopies and is the first computer-aided detection (CADe) system that uses AI to recognize polyps. The tool was reviewed through the FDA's De Novo premarket review pathway for low-to-moderate risk novel devices.

The GI Genius works by emitting a sound and displaying green markers that are superimposed over the endoscope video when it recognizes a potential lesion; it is compatible with many video endoscopy systems. GI Genius utilizes an algorithm to recognize polyps that was developed by reviewing over 13 million colonoscopy videos. Gastroenterologists labeled tissues as being either healthy or unhealthy to help "teach" the GI Genius how to distinguish the two. While the GI Genius can recognize unhealthy tissue, it does not characterize lesions and is not a substitute for lab sampling to diagnose the tissue in question.

The safety and effectiveness of the GI Genius were assessed through a large randomized controlled trial in Italy. Out of a subpopulation of 263 subjects who required screening or surveillance at least every three years, 136 patients had a colonoscopy with the assistance of the GI Genius, while 127 patients served as controls and underwent a standard colonoscopy. In the experimental group, adenomas or carcinomas were detected in 55.1% of patients, while they were

only identified in 42% of patients in the control group. No adverse events related to the use of GI Genius were reported, although its use led to a small increase in the amount of healthy tissue that was biopsied.

Overall, GI Genius shows great promise as a way to enhance the quality and reliability of colonoscopies by aiding physicians who may otherwise miss polyps that are hard to see.

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