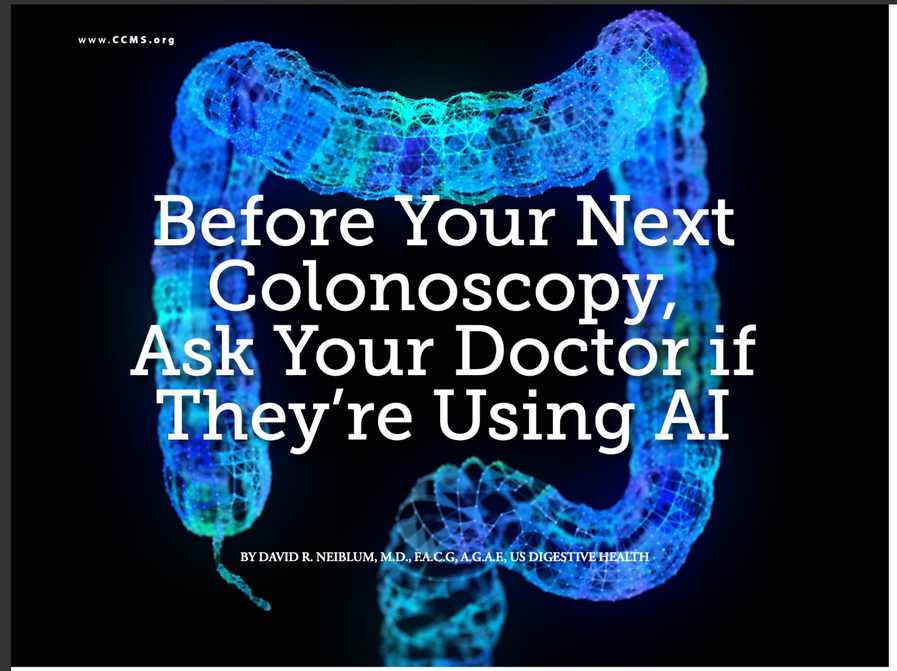

Before Your Next Colonoscopy, Ask Your Doctor if They're Using AI

BY DAVID R. NEIBLUM, M.D., F.A.C.G, A.G.A.F, US DIGESTIVE HEALTH

Much has appeared in the press recently regarding the risks and dangers of artificial intelligence (AI). College students use ChatGPT to draft term papers instead of writing it themselves; lawyers rely on AI to write briefs – sometimes very inaccurately and with fictitious case examples, leading to sanctions. Even global destruction has been discussed as a possible threat of AI (link: https://www.safe.ai/statement-on-ai-risk#open-letter).

However, some applications of AI are not only improving medical care, but in some cases may well save lives. In gastroenterology, we're using it to find polyps during colonoscopy. The traditional method involves the doctor watching a TV screen as the scope is advanced through the colon, and then removed, relying on eyesight and experience to find the small growths which, over time, could turn into colorectal cancer (CRC). Since the National Polyp Study in the early 1990s, and in many studies since, it's been proven conclusively that removal of adenomatous colon polyps significantly lowers the incidence of CRC. There have been many quality improvements in endoscopic technology over the years, including using high-definition monitors, more maneuverable and variably rigid scopes, as well as new ancillary tools to remove polyps, stop bleeding, and even close defects in the colon, avoiding surgery.

We have quality measures we closely track during these procedures, such as the percentage of asymptomatic patients in whom we find polyps (Adenoma Detection Rate, ADR), how many minutes we spend on the inspection part of each colonoscopy ("withdrawal time") and how often we get to the end of the colon – these reflect how skillful the doctor is in finding polyps. Finding more polyps generally means we prevent more cancers. Not all doctors and GI groups track these measures, but ideally should. Studies have also suggested that up to 25% of polyps can be missed on colonoscopy, even by experienced doctors. I've done many thousands of such procedures in my career, and at this point, I thought I was pretty good at it.

However, about 18 months ago, my group started using a new AI-powered device which uses computer-aided detection algorithms to find polyps – sort of like having another doctor (or three) looking over one's shoulder when doing the procedure. The program is loaded with over 13 million images of polyps, in all shapes and sizes, including the very flat sessile ones that we sometimes struggle to find. In studies, doctors using the system increased their ADR up to 14% higher than previously. That may not sound so impressive, until one realizes that each 1% increase suggests a 3% drop in colon cancer risk. That's a whopping 42%. When the system detects what it considers a polyp, a bright green box flashes around that site, alerting us to the spot to examine more closely; and it's been measured that the system finds these lesions over 80% faster than the doctor's eye can find them.

The device is the first of its kind for this application, but others are in the works. There are also other related devices becoming available, to detect lesions and bleeding sites in the small intestine, where our scopes have a difficult time reaching. For over 15 years, we and other groups have used a "capsule endoscope," a swallowed pill-sized camera that tumbles through the small bowel to visualize this area, with images being downloaded wirelessly to a cellphone-sized device over about 6 hours as the patient goes about his business at home. We then view the 70,000 images taken as sort of an old fashioned "card flip" motion picture, looking for abnormal images. The film takes precious time to watch, however, and is fairly tedious. The new AI-powered systems will preview the images for us and direct us quickly to anything abnormal – freeing up time to see more patients.

When I first tried the colonoscopy AI system, I was annoyed and distracted by the green flashing box popping up – it seemed to think some normal colon folds were polyps, so these were "false positives." But the miraculous thing about this technology is that it learns – so now it almost never flashes unless a polyp is really there – including some I'd likely have missed. It's over 99% sensitive for polyps, and has less than 1% false positives in its latest iteration. I and my colleagues now love it.

Welcome to the future; in this case, a potentially lifesaving one. ■

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