Risks and Benefits of Colonoscopy in Patients 90 Years or Older When Compared With Younger Patients

Jae Myung Cha,[*,‡] Richard A. Kozarek,[‡] Danielle La Selva,[‡] Michael Gluck,[‡] Andrew Ross,[‡] Michael Chiorean,[‡] Johannes Koch,[‡] and Otto S. Lin[‡]

*Gastroenterology Division, Kyung Hee University Hospital at Gang Dong, Kyung Hee University School of Medicine, Seoul, South Korea; and ‡Digestive Disease Institute, Virginia Mason Medical Center, Seattle, Washington

BACKGROUND & AIMS: **Although the numbers of medical procedures performed on extremely elderly patients (90 years or older, nonagenarians) are increasing, there are no data on the performance, diagnostic yield, or safety of colonoscopy for these patients. We compared the performance and safety of diagnostic colonoscopy, as well as lesions detected, in nonagenarians with patients who were 75 to 79 years old.**

METHODS: **In a retrospective study, we compared data from 76 extremely elderly patients (90 years or older) with data from 140 very elderly patients (75 to 79 years old, controls), all of whom underwent diagnostic colonoscopy from January 2010 through March 2013 at Virginia Mason Medical Center. All colonoscopies were performed by 15 endoscopists. We compared rates of colonoscopy completion, bowel preparation quality, diagnostic yield, and adverse events.**

RESULTS: **In extremely elderly patients, more colonoscopies were performed under general anesthesia, compared with controls ($P < .001$). When extremely elderly patients underwent colonoscopies with moderate sedation, lower doses of midazolam and fentanyl were given, compared with controls ($P < .001$). Colonoscopies were completed in a lower proportion of extremely elderly patients (88.2% vs 99.3% for controls, $P < .001$), and these patients had a higher incidence of inadequate bowel preparation (29.7% vs 15.0% for controls, $P = .011$). Colonoscopies were also associated with cardiopulmonary events in a higher proportion of extremely elderly patients ($P = .006$) as well as overall adverse events, compared with controls ($P = .002$). A higher proportion of extremely elderly patients were found to have advanced neoplasia (28.4% vs 6.4% of controls, $P < .001$) as well as any neoplasia ($P < .001$ vs controls). A greater percentage of extremely elderly patients also had large lesions ($P = .002$) and malignancies detected by histology ($P < .001$ vs controls). Eleven extremely elderly patients (14.9%) were found to have cancer or high-grade dysplasia by colonoscopy.**

CONCLUSIONS: **In patients 90 years or older, diagnostic colonoscopy is associated with increased risk for incomplete procedure, inadequate bowel preparation, and adverse events. However, a large proportion of patients are found to have advanced neoplasia and cancer, compared with patients 75 to 79 years old.**

Keywords: Old Age; Risk Factor; Colon Cancer Detection; Complication.

With increasing life expectancy, the number of colonoscopies in the elderly has dramatically increased in the United States.[1,2] The incidence of colorectal cancer (CRC) rises steadily with age, and the detection of colorectal neoplasia is one of the major objectives of colonoscopy. However, the potential benefits of colonoscopy need to be balanced against the competing risk of mortality from other diseases in elderly individuals.[3] Generally, colonoscopy is feasible and effective in appropriately selected elderly patients[4] but may be associated with lower procedural completion rates, higher complication rates, and higher risk of inadequate bowel preparation when compared with younger patients.[5–10]

Despite decision analyses suggesting that screening colonoscopy may be cost-effective even in very elderly

Abbreviations used in this paper: ASA, American Society of Anesthesiologists; CORI, Clinical Outcomes Research Initiative; CRC, colorectal cancer; EE, extremely elderly; VE, very elderly; VMMC, Virginia Mason Medical Center.

1542-3565/$36.00
http://dx.doi.org/10.1016/j.cgh.2015.06.036

patients,[11] such screening is generally not advised for those older than 75 years of age.[12] However, diagnostic colonoscopy is quite feasible even in so-called very elderly patients, ie, those older than 75 years of age. In recent years, clinicians are increasingly faced with the prospect of having to perform diagnostic colonoscopy on nonagenarians, a group that potentially may be susceptible to even higher risks of adverse events than octogenarians.

The aim of this study was to assess the diagnostic yield, complication rates, and procedural success rates of diagnostic colonoscopy in patients ≥90 years old (termed the extremely elderly [EE] group), as compared with controls of 75- to 79-year-old patients (very elderly [VE] group).

Methods

Subjects

We conducted a controlled study comparing diagnostic colonoscopy outcomes performed between January 2010 and March 2013 in concurrent EE and VE patients. We retrospectively identified potentially eligible subjects from the Virginia Mason Medical Center (VMMC) colonoscopy database, an ongoing, prospectively updated quality control database. For each subject, there was an extensive review of the colonoscopy database as well as all clinic notes, procedure reports, hospital admission notes, and discharge summaries in VMMC electronic medical records (Cerner Information Systems, Kansas City, MO) for a 30-day period after the colonoscopy to detect adverse events.

Data on patient demographics, American Society of Anesthesiologists (ASA) physical status classification, major comorbidities (with non–age-adjusted Charlson comorbidity index score), indication for colonoscopy, sedative dosage, colonoscopy completion, bowel preparation quality, technical difficulty, adverse events, and diagnostic yield and characteristics of detected lesions were collected for every subject. All data abstraction was done by 2 authors (J.M.C., D.L.), and discrepancies were resolved by simultaneous co-review of the records with the senior author (O.S.L.) until consensus was reached. All pathology reports were reviewed by at least 1 author (J.M.C.). Because all the colonoscopies in the EE group were diagnostic, we included only diagnostic procedures in the VE control group, excluding screening or surveillance colonoscopies. Cases were also excluded if the indication for colonoscopy was purely therapeutic, such as stent or decompression tube placement. This study was approved by the VMMC institutional review board. Because of its retrospective nature, requirements for individual informed consent were waived.

Colonoscopy Outcomes

All colonoscopies were performed by 15 endoscopists, all of whom were board-certified gastroenterology attending physicians with experience in at least 5000 previous colonoscopies. The procedures were done by using Olympus CF (Olympus America, Leeds, MA) video colonoscopes after bowel preparation with a standard split-dose polyethylene glycol regimen. The shape, size, number, and location of all detected polyps were documented. Right-sided location was defined as being proximal to the splenic flexure.

The quality of the bowel preparation was graded as excellent, good, adequate, fair/mediocre, or poor; excellent, good, or adequate grades were considered acceptable preparation. Procedures were classified as moderately or severely difficult if the endoscopist used these terms (or a synonym) to describe the procedure in the report. Procedures in which the colon was merely described as tortuous or loopy were not classified as difficult unless the endoscopist also described the procedure as being difficult. Complete colonoscopy was defined as intubation of the cecal pole or ileocecal anastomosis with photographic documentation. To achieve cecal intubation, all endoscopists had ready access to variable stiffness adult and pediatric colonoscopes and were able to freely change between the two during the course of each procedure. No single-balloon or double-balloon enteroscopes were used.

Adverse events included those caused by the bowel preparation process or the procedure itself within a 30-day window. All patients received a follow-up call by a nurse 24–72 hours after the procedure to identify immediate post-procedural complications; later adverse events were captured by review of medical records. Adverse events were classified as gastrointestinal events (such as bleeding or perforation), major cardiopulmonary events (myocardial infarction, respiratory failure, or symptomatic arrhythmia), minor cardiopulmonary events (asymptomatic transient oxygen desaturation to <90%, transient hypotension, or asymptomatic arrhythmias), or other problems (such as agitation or musculoskeletal injury). Any emergency department visit within the 30-day window was considered an adverse event. A severe adverse event was defined as any major cardiopulmonary event, post-polypectomy bleed or perforation, or any complication requiring unplanned hospitalization, transfusion, or abortion of the procedure.

For polyps, advanced neoplasia was defined as an adenoma or sessile serrated polyp ≥1 cm in size or any adenoma or sessile serrated polyp with high-grade dysplasia, >25% villous features (villous or tubulovillous histology), or carcinoma. Non-advanced neoplasia included tubular adenomas (<1 cm in size) and sessile serrated adenomas (<1 cm), but not hyperplastic polyps. The colonoscopic findings were categorized as (1) advanced neoplasia, including cancer, (2) non-advanced