Prevalence and risk of colorectal neoplasms in asymptomatic, average-risk screenees 40 to 49 years of age

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Background: A paucity of information exists regarding colorectal neoplasm in asymptomatic, average-risk individuals 40 to 49 years of age.

Objective: To evaluate the prevalence and risk factors of colorectal neoplasms in those in their 40s.

Design: Cross-sectional study.

Setting: Results offered to subjects of a health care provider that offers screening services as part of an employer-provided wellness program.

Patients: A consecutive series of 1761 asymptomatic, average-risk screenees 40 to 59 years of age.

Intervention: First screening colonoscopy.

Results: The prevalence of overall colorectal neoplasm in subjects of ages 40 to 44 years, 45 to 49 years, 50 to 54 years, and 55 to 59 years increased significantly with increasing age (13.7%, 20.2%, 21.0%, and 23.8%, respectively; $P < .001$). The prevalence of advanced adenomas in subjects of ages 40 to 44 years, 45 to 49 years, 50 to 54 years, and 55 to 59 years increased significantly with age (1.9%, 3.0%, 3.2%, and 5.9%, respectively; $P = .004$). Multivariate analysis of data from the 40- to 49-year age group identified an increased risk of colorectal neoplasm associated with ages 45 years and older (odds ratio [OR], 1.68; 95% CI, 1.20-2.35), male sex (OR, 1.76; 95% CI, 1.15-2.69), presence of abdominal obesity (OR, 1.57; 95% CI, 1.12-2.21), and metabolic syndrome (OR, 1.56; 95% CI, 1.03-2.35), whereas for advanced adenomas, abdominal obesity (OR, 2.37; 95% CI, 1.06-5.27) and metabolic syndrome (OR, 2.83; 95% CI, 1.23-6.53) were the independent risk factors.

Limitations: Single-center study and the cohort composed of ethnic Korean subjects who lived in the same geographic region.

Conclusion: In average-risk individuals 40 to 49 years of age, men with abdominal obesity or metabolic syndrome might benefit from screening colonoscopy starting at 45 years of age to detect colorectal neoplasm. (Gastrointest Endosc 2010;72:480-9.)

Colorectal cancer (CRC) screening guidelines from multiple professional societies recommend that colonoscopy screening begin at age 50 for asymptomatic, average-risk individuals[1-4] because of the dramatic increase in the incidence of CRC during the sixth decade of life.[3,5,6] Given the long time needed for an adenoma to progress to a carcinoma, the increased number of cases of CRC diagnosed in this age group may originate from adenomas present in

Abbreviations: AOR, adjusted odds ratio; CRC, colorectal cancer; MetS, metabolic syndrome; NNS, number needed to screen; OR, odds ratio.

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individuals in their 40s.[7] Thus, these cancers may be prevented by colonoscopy with polypectomy of premalignant lesions in the preceding decade.[7] Despite this theoretical argument for screening individuals in their 40s, not enough information exists regarding colorectal neoplasm in asymptomatic, average-risk individuals 40 to 49 years of age.

The identification of risk factors for colorectal neoplasm is important for tailored and individualized screening to increase cost-effectiveness and decrease the loss of screening resources.[7-9] Besides a family history of colorectal neoplasm,[10-12] several potentially relevant risk factors for colorectal neoplasm have recently been identified such as male sex,[13-15] smoking status,[16] alcohol consumption,[17] obesity,[18] abdominal obesity,[19] metabolic syndrome (MetS),[20-22] and regular use of aspirin.[23] There has been no report, however, of the risk factors for colorectal neoplasm in patients 40 to 49 years of age because previous studies of colorectal neoplasm in patients younger than 50 years of age had relatively small sample sizes or focused primarily on subjects younger than 40 years of age to evaluate potential genetic predispositions for CRC.[24]

In this study, we analyzed the results of screening colonoscopies offered to patients 40 to 59 years of age at a health care provider that offers screening services as part of an employer-provided wellness program. We first investigated the prevalence and clinicopathological characteristics of colorectal neoplasm, including potentially premalignant adenomas. Subsequently, we analyzed the risk factors for colorectal neoplasm, particularly focusing on advanced neoplasm as the primary target of screening.[25]

Take-home Message

- Abdominal obesity and metabolic syndrome are recognized as important risk factors in colorectal cancer (CRC). In the 40- to 49-year age group, ages 45 years and older, male sex, abdominal obesity, and metabolic syndrome were associated with an increased risk of overall CRC. In the 40- to 49-year age group, abdominal obesity and metabolic syndrome were associated with an increased risk of advanced neoplasm.

PATIENTS AND METHODS

Study participants

A cross-sectional study was conducted by using a consecutive series of subjects 40 to 59 years of age who underwent their first colonoscopy screening as part of an employer-provided wellness program at the Healthcare Center of Konkuk University Medical Center in Seoul, Korea, between September 2005 and March 2009. The Healthcare Center provides annual or biannual health checkups to individuals employed at corporations that offer medical screening services as part of their corporate wellness plans. These health checkup programs are offered to the employees of participating companies at no cost to the employee. Companies differ in their policies regarding which levels of employees are eligible for the health checkup programs, but most companies offer it to all levels of employees, and their colonoscopy screening is provided as part of the wellness examination for all adults older than the age of 40. Subjects to be screened received a standard questionnaire, including questions regarding their personal medical history (including history of colorectal cancer or polyps), current medications, family history (including colorectal cancer or polyps), and lifestyle habits (including smoking and alcohol consumption). Telephone interviews were conducted to ensure that screenees who called to make an appointment were asymptomatic (ie, no recent changes in bowel habits, lower abdominal pain, or visible rectal bleeding). Subjects with symptoms were urged to seek medical care from their usual provider.

We excluded the subjects with a previous experience with colonoscopy, sigmoidoscopy or barium enema, incomplete questionnaire answers, and colonoscopies in which the cecum was not reached. To ensure that the population was of average risk, we excluded individuals who had a personal history of colorectal neoplasm or inflammatory bowel disease or a family history of colorectal neoplasm. This study was approved by the Institutional Review Board of Konkuk University Medical Center.

Colonoscopy

All colonoscopies were performed by experienced colonoscopists by using a CF-H260AI instrument (Olympus, Tokyo, Japan). During colonoscopy, the location, size, number, and appearance of colorectal neoplasms were recorded. The boundary between the proximal colon and the distal colon was defined as the junction of the splenic flexure and the descending colon as assessed by the endoscopist. Polyp size was estimated by using open-biopsy forceps. The colonoscopic appearance of a colorectal neoplasm was classified as either polypoid or flat/depressed. A flat/depressed lesion was defined as an endoscopically visible flat and/or a depressed mucosal lesion with a height less than half the diameter of the lesion.[26] An advanced neoplasm was defined as a cancer or adenoma that was at least 10 mm in diameter and had high-grade dysplasia, villous or tubulovillous histological characteristics, or any combination thereof.[1] For patients with multiple neoplasms, the size and appearance of the neoplasms with advanced pathology or the largest polyp were reported.

Measurements, definitions, and laboratory assays

According to the recommendations of the Western Pacific regional office of the World Health Organization,[27] body mass index was categorized as follows: normal (<23