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Association between family history of malignant neoplasm with colorectal adenomatous polyp in 40s aged relative person

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ABSTRACT

Purpose: We assessed the association between a family history of malignancy and risk of colorectal adenoma among individuals aged 40–49 years.
Methods: The study population consisted of subjects, aged in their 40s, who underwent colonoscopy. Their family histories of cancer were collected with a self-administered questionnaire. A logistic regression model was used to assess the association between a family history of cancer and the risk of colorectal polyp.
Results: In total, 2275 participants were included in the study. Univariate analysis showed that old age, male sex, current cigarette smoking, BMI > 25 kg/m^2, and a family history of colorectal cancer (CRC) were risk factors for the development of sporadic colorectal adenomatous polyps in these patients. A multivariate analysis showed that a family history of CRC or kidney cancer was associated with adenoma development. A family history of CRC was also a risk factor for advanced and multiple adenoma.
Conclusions: This study shows that a family history of CRC is a risk factor for advanced and multiple colorectal adenoma in people in their 40s. These results support earlier screening for colorectal neoplasms in individuals with a family history of CRC.

1. Introduction

Colorectal cancer (CRC) is one of the leading causes of cancer death in industrialized nations [1] and is the fourth greatest cause of cancer death in Korea [2]. Screening for the early detection and prevention of CRC can substantially reduce the morbidity and mortality associated with the disease [3,4]. The CRC screening guidelines of many professional societies recommend that screening begin at an age of 50 years for asymptomatic, average-risk individuals, with various combinations of fecal occult-blood testing, flexible sigmoidoscopy, barium enema, and colonoscopy [5–7]. The main reason for the choice of age 50 as the primary threshold for screening is the dramatic increase in the incidence of CRC during the sixth decade of life [8]. Previous studies have established that patients with a first-degree relative (FDR; defined as a parent, sibling, or child) with CRC are at 2- to 3-fold higher risk of CRC than the general population. This has prompted recommendations for earlier colonoscopic screening of individuals with a family history of CRC [9]. Specifically, the current guidelines of many societies recommend that patients with a FDR with colon cancer before the age of 60 should be advised to undergo screening colonoscopy from at least the age 40 years, or 10 years before the index case, which should be repeated every five years [5–7,10,11].

Identification of the risk factors for sporadic CRC before the age of 50 might be a useful target for CRC screening in this age group. Several established risk factors for sporadic colorectal neoplasm have been identified [12–18], including advanced age [18,19], male sex [17–20], smoking history [14,19,20], alcohol intake history [13,19], high body mass index (BMI) [12], metabolic syndrome [15,16,21], and a family history of CRC [18,20]. However, few large cohort studies [17,18,20,22] have reported the prevalence and risk factors of adenoma focusing on individual younger than 50 years. Few studies have reported the prevalence and risk factors for adenoma, specifically in individuals younger than 50 years with a family history of CRC or other malignant neoplasms.

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Therefore, the purpose of this study was to determine the contribution made by an FDR with a malignancy to the incidence of colorectal adenoma. We also determined the clinicopathological characteristics of colorectal adenomatous polyps in individuals in their 40s who visited a hospital for health screening.

2. Methods

2.1. Study participants

The study participants were a subset of the subjects of the "Colorectal Polyp Registry at the National Cancer Center of Korea" study [19]. All participants who underwent cancer screening and colonoscopy at the National Cancer Center, Korea, between April 2007 and December 2009 were invited to participate in the Colorectal Polyp Registry. Among 26,600 eligible population, 16,300 were enrolled in the Colorectal Polyp Registry. Among them, 13,335 participants received colonoscopy for screening purposes, 7278 were provided detailed information on their family histories of cancer in a questionnaire, and 3070 of them were 40–49 years old. Participants with a past history of cancer ($n = 134$) or colorectal polyp ($n = 259$) were excluded. A further 402 participants with a pathological diagnosis of non-adenomatous polyp (i.e., hyperplastic polyp, serrated polyp, or other types of polyp) or missing pathological reports were also excluded from the analysis. Ultimately, 629 patients with adenomatous polyps and 1646 polyp-free controls were included in the analysis (Fig. 1).

2.2. Colonoscopy and diagnosis of colorectal neoplasia

All colonoscopies were performed by seven experienced colonoscopists, each of whom had previously performed over 1000 colonoscopies per year for more than five years. The patients were examined with video colonoscopy (Olympus CF-H260 or CF-Q260; Olympus, Tokyo, Japan) and then underwent total colonoscopy. Before colonoscopy, the patients received either two 45 mL doses of sodium phosphate (Flee; C. B. Fleet Co., Inc., Lynchburg, Virginia) or 4 L doses of a polyethylene glycol solution (Colyte-F; Taejoon Pharm, Seoul, Korea). Colorectal neoplasia was removed by endoscopic resection or surgery, as determined by the colonoscopist.

Pathological diagnoses were made by pathologists who were unaware of the clinical findings or the medical histories of the patients. Advanced neoplasia was defined as an adenoma with a diameter of at least 10 mm, a tubulovillous or villous adenoma, an adenoma with high-grade dysplasia, or a lesion with invasive features [23].

2.3. Risk factor measurement

A self-administered questionnaire and instructions for bowel preparation were sent to the participants two weeks before the scheduled visit. The questionnaire items included sociodemographic characteristics (e.g., age, education, occupation, household income, and marital status), medical and disease histories, cigarette smoking status, alcohol consumption habits, regular exercise habits, and dietary intake. The patients were asked whether there was any family history of cancer among their FDRs with an open-ended questionnaire.

The height and weight of each subject were measured with an X-SCAN PLUS II Body Composition Analyzer (Jawon Medical, Gyeongsan, Korea), and BMI was calculated as weight (kg)/(height [m])^2. Waist circumference was measured 1 cm above the umbilicus at minimal respiration.

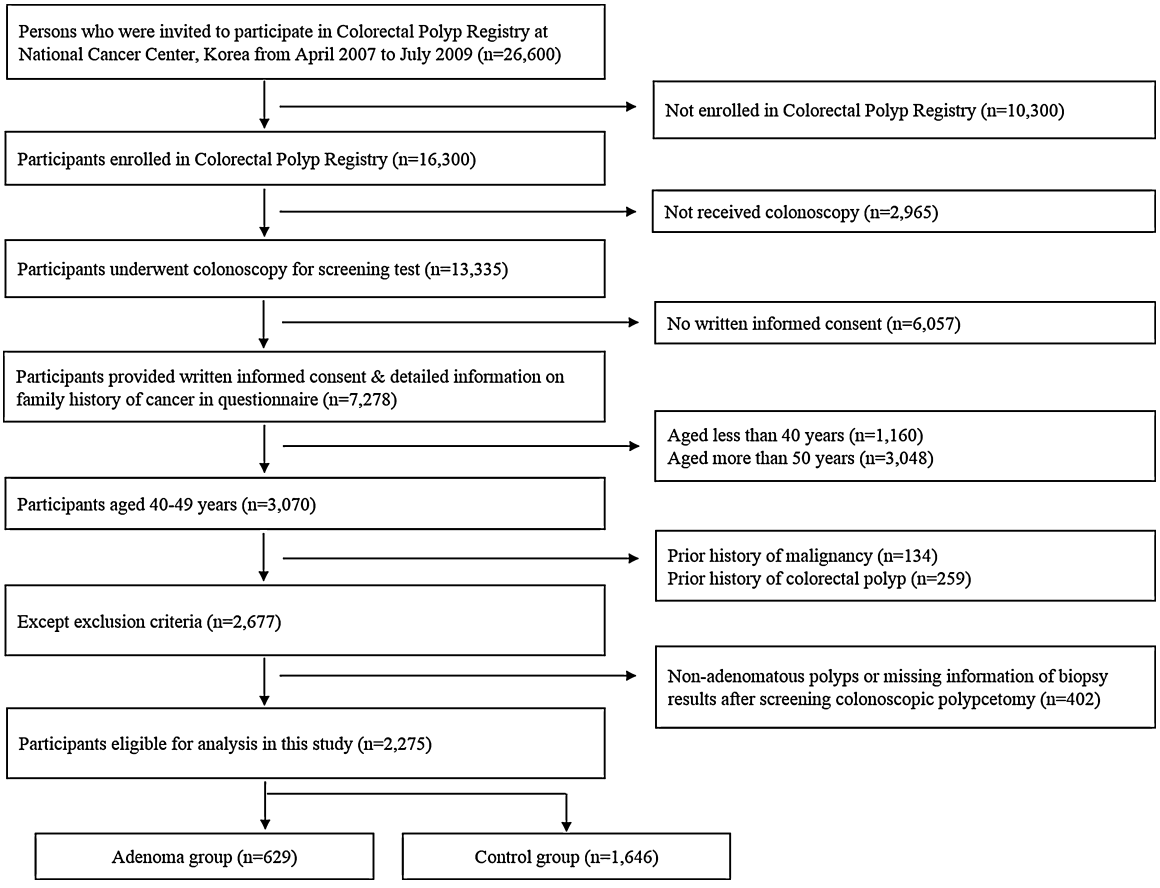

Fig. 1. Inclusion and exclusion of study participants.

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