



RAPID COMMUNICATION

Differences in characteristics of colorectal neoplasm between young and elderly Thais

Rungsun Rerknimitr, Winudda Ratanapanich, Pradermchai Kongkam, Pinit Kullavanijaya

Rungsun Rerknimitr, Winudda Ratanapanich, Pradermchai Kongkam, Pinit Kullavanijaya, Gastroenterology Unit, Department of Internal Medicine, Faculty of Medicine, Chulalongkorn University, Bangkok 10330, Thailand
Correspondence to: Rungsun Rerknimitr, MD, Gastroenterology Unit, Department of Internal Medicine, Faculty of Medicine, Chulalongkorn University, Bangkok 10330, Thailand. rungsun@pol.net
Telephone: +66-2-2564265 Fax: +66-2-2527839
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Abstract

AIM: To analyze the differences of clinical characteristics of colorectal neoplasm including polyps between the elderly and young Thai patients.

METHODS: Colonoscopy database from December 2000 to October 2004 was retrospectively analyzed. There were 1822 eligible patients who underwent colonoscopy (with a mean age of 56.6 years). Patients were classified into two groups: the older age group (aged ≥ 60 years; $n = 989$) and the younger age group (aged < 60 years; $n = 833$). Data were recorded on age, colonoscopic indications, tumor location, colonoscopic findings and their related histological findings.

RESULTS: Colorectal malignancy related lesions were more often found in the older age group (21%) than in the younger age group (12%). Left-sided lesions were detected more commonly than right-sided in both age groups in approximately two-thirds of all cases. Hematochezia showed greater association with left-sided lesions in the elderly. No relationship was found between age and neoplasm staging and severity.

CONCLUSION: The chance of detecting colorectal neoplasm by colonoscopy was higher in the elderly than in the young Thais. However, both groups had the lesions predominantly located in the left side.

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Key words: Colon neoplasm; Colonoscopy; Thais; Elderly

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INTRODUCTION

Colorectal cancer is one of the most common cancers worldwide. It is also the most frequent form of cancers among elderly population^[1]. In contrast, colorectal cancer is considered to be a rare disease in people younger than 40 years of age^[2]. The incidence rate of colorectal cancer is highest in the US, Canada, Japan, and Western Europe, being approximately 40 and 25-30 cases per 100 000 population in male and female, respectively. It is relatively uncommon in many developing countries, particularly those in Africa and Asia, where the average rate among men is 5-10 cases per 100 000 population and even lower in women^[3]. In Thailand, data showed that the incidence rates for colorectal cancer among men and women were 7.2 and 5.2 per 100 000 population, respectively^[4].

Recently, the Tumor Registry of Thailand reported that colorectal cancer has become the third most common cancer in the country, and the majority of patients were at advanced stages^[4]. Our recent study also revealed that more than half of colorectal cancer cases already had lymph nodes invasion, and their prognoses were poor^[5]. These reports also showed that most of the patients were older than 60 years of age. However, no data have been reported before regarding the clinical characteristics of this tumor which include adenomatous polyps, cancer staging at diagnosis, site location, pathological cell types, and their relationship to patient symptoms. Furthermore, no previous studies have focused on the older population, that intends to examine the association between age and characteristics of colorectal neoplasm in Thailand.

Therefore, this study was aimed to analyze the relationship between age and clinical characteristics of colorectal neoplasm including polyps in both older and younger Thai patients.

MATERIALS AND METHODS

Subjects

This is a retrospective study based on the colonoscopic database information from all colonoscopic examinations performed at King Chulalongkorn Memorial Hospital, Bangkok, Thailand from December 2000 to October 2004.

These data were computerized recordings by attending colonoscopists ($n = 8$) or by supervised trainees ($n = 12$). This database consisted of standard information collected for clinical purposes at the Gastroenterology Unit, King Chulalongkorn Memorial Hospital. Patients, who underwent colonoscopy except those who were previously diagnosed with colorectal neoplasms, were included in this study. Exclusion criteria included: cases of colorectal neoplasm followed up, post-colectomy patients and patients who had contraindication for colonoscopy, e.g., bleeding tendency and colonic perforation. Eighty patients were excluded because of the above-mentioned reasons.

There were 1822 patients eligible for the study who underwent colonoscopy during this period (788 men, 1034 women, mean age of 56.6 years). Patients were classified into two age groups: older age group (aged ≥ 60 years; $n = 989$) and younger age group (aged < 60 years; $n = 833$). Colonoscopies were generally performed if the following clinical indications were presented at interview: anemia (hemoglobin below 14 g/dL in male and 13 g/dL in female), abnormal radiography (by computerized tomography, ultrasonography, or barium enema), bowel habit change, family history of colorectal cancer or inherited colorectal cancer syndromes (e.g., familial adenomatous polyposis, hereditary non-polyposis colorectal cancer), positive stool occult blood test, abdominal pain, abnormal abdominal mass, and hematochezia. Additionally, in some cases, colonoscopy was used as a primary modality for investigation in the asymptomatic patients with personal awareness for colon cancer screening.

Methods

The majority of patients had only one colonoscopic clinical indication but thirty-three patients had more than one clinical indication. In this situation, the most serious indication was put as the first indication on the list. Among the thirty-three patients, only the first indication was used for analysis. In patients who need to repeat colonoscopy in this study period (62 patients), only the information from the first examination was included in this study. The average waiting time for patients who referred to colonoscopy at our hospital was less than 4 wk.

Colonoscopes in the present study were all standard long colonoscopes (CF-140 and CF-160, Olympus, Tokyo, Japan). Some patients required pediatric colonoscopies (PCF-140, Olympus, Tokyo, Japan). No magnified colonoscope was available during this study. Chromoendoscopy was not routinely done in our hospital.

Bowel preparation was selected by attending physicians either using a standard 90 mL of sodium phosphate or at least 3 L of polyethylene glycol. Patients were asked to refrain from fruit and vegetable 2 d prior to the study date. Patients with suboptimal bowel preparation were required to take more of the above agents until the preparation was optimal for colonoscopy, otherwise he or she had to be rescheduled.

Conscious sedation was used for our colonoscopy with a combination of intravenous midazolam and meperidine. The dosage of these agents were titrated by colonoscopists. No other mode of sedation or general

Table 1 General characteristics of patients

Characteristic	Men	Women	Total
<i>n</i>	788	1034	1822
Mean age (yr)	56.4	56.7	56.6
Age range (yr)	14-91	14-100	14-100

anesthesia was used in the present study.

Data were recorded on age, gender, colonoscopic indications, colonoscopic findings and their related histological findings. Colorectal neoplastic lesions were categorized into colorectal polyp and colorectal cancer. Colorectal polyp is a colonic neoplasm which does not contain tumor cells. They were also classified into 2 types based on their histological findings and potential to become a cancer; 'hyperplastic polyps' contain only hyperplastic cells, with no potential to develop into a cancer. Adenomatous polyps contain tubulovillous, villous, or tubulovillous cells and have precancerous change. In this study, we termed "colorectal malignancy related lesions" for determining both colorectal adenoma and colorectal cancer.

Both colorectal cancer and polyps were designated as right-sided lesions if they were proximal to the splenic flexure (including cecum, ascending colon, transverse colon) and left-sided lesions if they were distal to splenic flexure (including descending colon, sigmoid colon, and rectum). If polyps or cancers were found in both sides on the same patient, these were classified as pancolonic distribution. Patient with synchronous polyp and cancer was registered as a cancer case. Colorectal cancer was staged based on Modified Dukes classification^[6]. They were classified into 4 types based on their histological findings: well differentiated, moderately differentiated, poorly differentiated adenocarcinoma, and other forms of cell types. Incomplete data from computer database were reviewed manually from medical records.

Statistical analysis

Descriptive statistics are expressed as number (%). Statistical analysis was performed by Chi-square or Fisher exact test. $P < 0.05$ was considered to be statistically significant. Data were analyzed with the Statistic Package for Social Sciences (SPSS 11.5), (Chicago, IL, USA).

RESULTS

The colonoscopic records of 1822 patients were examined. There were 788 men (mean age 56 years) and 1034 women (mean age 57 years) (Table 1). The overall completion rate for colonoscopy was 96.4% ($n = 1756$). Sixty-six patients had incomplete colonoscopy and subsequently underwent double contrast barium enema. Only two patients were found to have small polyps in the ascending colon. However, repeated (complete) colonoscopies were unable to detect such polyps.

There was a statistical difference in colonoscopic findings between age groups. Colorectal malignancy related lesions were more often found in the older age group (21%)

Table 2 Age groups and colonoscopic findings

Colonoscopic finding	Younger age group (< 60 yr) (%)	Older age group (≥ 60 yr) (%)	Total	
			n	%
Normal	42.9	33.6	704	38.6
Colorectal polyps	12.8	25.2	337	18.5
-colorectal adenoma	7.0	14.0	185	10.5
-nonadenoma	5.8	11.2	152	8.0
Colorectal cancer	5.1	7.1	109	6.0
IBD	2.4	1.0	33	1.8
Other diagnoses	36.8	33.0	639	35.1
Total (%)	100	100		100
N	989	833	1822	

Table 3 Age groups and site distribution of “colorectal malignancy related lesions”

Cancer site	Younger age group (< 60 yr) (%)	Older age group (≥ 60 yr) (%)	Total	
			n	%
Right-sided	37.5	39.3	115	38.6
adenoma	20.3	29.1	75	24.7
cancer	17.2	10.2	40	13.7
Left-sided	62.5	60.7	180	61.4
adenoma	38.7	37.1	110	37.9
cancer	23.8	22.9	70	23.5
Total (%)	100	100	-	100
N	120	175	295	-

Table 4 Locations of colorectal malignancy related lesions and indication for colonoscopy in elderly patients

Indication	Right-sided lesions (%)	Left-sided lesions (%)	Total	
			n	%
Anemia	20.0	18.5	34	19.1
Abnormal radiography	4.3	0.9	4	2.2
Bowel habit change	41.4	29.6	61	34.3
Family history	5.7	1.9	6	3.4
Stool occult blood positive	1.4	5.6	7	3.9
Abdominal mass	2.9	6.5	9	5
Abdominal pain	2.9	6.5	9	5
Hematochezia	5.7	22.2	27	15.7
Check-up	12.9	5.6	13	8.4
Weight loss	2.9	2.8	5	2.8
Total (%)	100	100		100
N	69	106	175	

Table 5 Cancer staging by age groups

Cancer staging	Younger age group (< 60 yr) (%)	Older age group (≥ 60 yr) (%)	Total	
			n	%
Duke A	14.3	13.6	15	13.9
Duke B	46.9	40.7	47	43.5
Duke C	8.2	23.7	18	16.7
Duke D	30.6	22.0	29	25.9
Total (%)	100	100		100
N	50	59	109	

than in the younger age group (12%), ($\chi^2 = 22.76$, $DF = 1$, $P < 0.05$). When we classified colorectal malignancy related lesions into “adenoma” and “cancer”, we found that adenoma cases were detected significantly more often in the older age group ($\chi^2 = 26.45$, $DF = 1$, $P < 0.05$) as well. In addition, tubulovillous adenoma was the most common cell type detected in both age groups (45.2% and 47.2%). Although colorectal cancers were more often found in the older patients than in the younger patients, this difference was not statistically significant ($\chi^2 = 3.67$, $DF = 1$, $P < 0.06$), (Table 2).

There was no statistical difference in sites of lesions found between younger and older age groups ($P < 0.05$). Left-sided lesions were detected more commonly than right-sided in approximately two-thirds of all cases in both age groups. Additionally, both colorectal adenoma and cancers were detected more often in the left than in the right. When we analyzed subgroups of “adenoma” and “cancer”, we found no statistically significant difference between locations of either “adenoma” or “cancer” and age groups (Table 3). There was no patient with synchronous cancer. However, 3 patients with left-sided cancer had small polyps in the same side. In addition, pancolonic polyps were demonstrated only in 7 patients (not included in the Table). In the elderly patients, bowel habit change was the most common presentation for

both left- and right-sided lesions. However, there was no statistical difference among locations of lesions for this symptom. Hematochezia showed greater association with left-sided lesions in elderly group ($\chi^2 = 8.73$, $DF = 1$, $P < 0.05$). On the other hand, “check-up” was a common indication to find right-sided lesions in this age group ($\chi^2 = 10.68$, $DF = 1$, $P < 0.05$). There was also no statistical correlation between anemia and location of the lesions in elderly group ($\chi^2 = 1.10$, $DF = 1$, $P = 0.29$). Patients with colorectal cancer had significantly higher proportion of abdominal pain and abdominal mass than those with adenomatous polyps ($\chi^2 = 13.48$, $DF = 1$, $P < 0.05$). However, there was no significant difference in other symptoms between patients with colorectal cancer and polyps. Other indications, including abnormal radiography, family history of cancer, positive stool occult blood, and weight loss were presented in only a small number of patients (Table 4).

Moderately differentiated adenocarcinoma was the most common cancer cell type detected in both age groups (51.0% and 59.3%). Duke B (40%) and Duke C (24%) were the most common stages found in elderly group (Table 5). However, there was no statistical difference in cancer staging between age groups.

DISCUSSION

Evidence supports that the prevalence of colorectal neoplasm increases with age and varies with country and lifestyle^[7]. In the United States, autopsy studies have shown an overall prevalence of colorectal neoplasm ranges from 30% to 50%, which is increasing with age: 30% at 50 years; 40%-50% at 60 years, and 50%-65% at 70 years^[8]. For

patients undergoing colonoscopies, the detection rate of a neoplasm was significantly higher in the older age group. These findings are supported by reports of neoplasm at colonoscopy of higher yield in the older patients^[9-11].

The present series has shown that colorectal neoplasm was more likely to be found in older age Thais. This finding was consistent with previous studies in Western countries^[12-14]. The hypothesis “with age advances, alteration or change of tissues in natural process of more accumulation of somatic mutation” may be applicable in this finding^[15].

There are several factors that influent prognosis of patients with colorectal cancer, including cell types and staging at presentation. Some reports from many countries suggested that younger patients have cancers with less aggressive cell types and staging than older patients^[16-18]. However, the present study did not demonstrate the difference of tumor cell types and staging between the age groups. We speculate that the advanced age may not have a significant effect on the severity of colorectal cancer in Thais. In addition, a subgroup analysis of the extremely aged patients (> 75 years) was not done to determine the impact of extreme age as a factor for colonic neoplasm development.

The completeness of colonoscopy is important to determine the quality of the study. Incomplete colonoscopy may cause a falsely low prevalence of right-sided lesion. Our study demonstrated a high rate of complete colonoscopy (96%) which is comparable to others^[19-21]. The present series showed that left-sided cancer and polyp were detected more often than the other side. These findings were consistent in both age groups, whereas the evidences in Western countries were different. They showed a rightward shift of colonic neoplasm in elderly population^[22-24]. Although this difference may be the result of a small number of subjects with colorectal polyps and cancer found, the characteristics of this tumor in Thais may actually be different from those in Western countries. Epidemiological studies also describe that this variation in the frequencies of right-sided and left-sided lesions can be explained by differences in some environmental factors including dietary and life style, although the underlying etiology is not clear^[13,25]. The pattern of external risk factors in Thai population might be different from those of the Western countries. Moreover, part of our study population was a group of referred patients. In addition, our results represented only patients from a single center. Therefore, we need a multi-center study for the exposure of different risk factors among different age groups in the Thai population in order to identify the reason for the discrepancy between the findings in this study and those from Western countries.

When this study specifically looked at the older age subjects, it showed that bowel habit change, anemia and hematochezia were among the most common presentations associated with “colorectal malignancy related lesions”. Additionally, this study found that some clinical indications were associated with the location of lesions. For example, hematochezia showed a greater association with left-sided lesions and “check-up” was the most common indication to find right-sided lesions.

This finding was quite similar to those reported in previous studies from Thailand^[26-27]. Information from this study helps predict tumor location based on some clinical presentations, which in turn, may guide the choice of investigation, especially in the settings with limited access to gastroenterologists or colonoscopy, such as the rural area of Thailand. For example, hematochezia suggests that lesions were more likely to be found in left-sided colon. Therefore, physicians may choose to first investigate with flexible sigmoidoscopy, which can clearly examine left-sided colon, and barium enema was only done in cases of tumors which are not detected with sigmoidoscopy.

In our series, bowel habit change was the most common presentation of colorectal malignancy related lesions. In addition, it was also more commonly recorded in right-sided lesions. However, the relationship between this symptom and location was not statistically significant. Furthermore, other major clinical presentations recorded in the older age group, including anemia, abdominal pain and mass did not show significant association between locations of colorectal lesions and these symptoms. Therefore, this study demonstrated that other symptomatic clinical presentations except hematochezia tend to be of no benefit as a diagnostic tool for prediction of location in the older patients.

The present series showed no statistical significance between location of tumor and staging in Thai elderly. While Kawazuma *et al.*^[28] found that right-sided lesions were more commonly associated with higher degree of staging and severity. The reason why patients with right-sided colon cancer had poorer survival than other anatomical sub-sites may be due to lack of symptoms and delayed detection of cancer^[28].

Currently, colonoscopy is widely used for detection of colorectal neoplasm among the older age group because of its high diagnostic yield to detect right-sided lesions^[14]. From this study, although we did not find more association with right-sided lesions in advanced age, it showed that right-sided neoplasm represented approximately 40% of all subjects. Therefore, it suggests that colonoscopy continues to be the best screening method for colorectal neoplasm detection for Thai elderly because of its capacity to examine the entire colon and rectum. However, it is practically impossible to have this modality available for the whole nation at this moment due to the lack of colonoscopic resources^[29]. In addition, double contrast barium enema plus flexible sigmoidoscopy may be an alternative screening method which could also examine entire colon in the mean time when access to colonoscopic resources is limited.

The major limitation of this study was that many patients underwent colonoscopy in the study had been examined at other institutes and were referred to this department because colorectal cancer was suspected. In addition, we are unable to know whether the subjects in this study were representative of the general population in Thailand. Therefore, the results of this study may overestimate the overall prevalence. Additionally, this study was conducted at only one center, which may limit the generalization. Moreover, data collected in this study only included clinical characteristics of colorectal neoplasm

detected by colonoscopy, but did not include information on risk factors, which are necessary to explain findings in this study. Therefore, further studies regarding risk factors such as diet and life style in Thai population is necessary to explain the similarity and differences in the characteristics of colorectal cancer between Thais and those in Western countries.

In conclusion, colorectal neoplasm was more likely to be found in the elderly Thais. Some clinical presentations in older patients may give a clue to the location of lesions that can help choose appropriate investigations. In contrast to Western population that advanced aged patients had more right-sided lesions, left-sided neoplasm still predominated in the symptomatic Thais elderly.

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COMMENTS

Background

Colorectal malignancy is one of the major cancers in the West. Recently, there has been a rising incidence of this cancer in Asians. However, data regarding this type of cancer in Asians are still scanty.

Research frontiers

Elderly Thais had a higher chance of colorectal cancer than the young. The majority of cancers were found to be in the left side of the colon in both elderly and the young.

Innovations and breakthroughs

This is so far, the largest report of colonoscopic results in Thai elderly. In this report, the location of tumor in elderly Thais was still predominantly in the left side of the colon, whereas there is a rightward shift of tumor location in the western population.

Applications

The screening for colorectal cancers by colonoscopy is not yet a standard protocol in Thailand. This study shows the benefit of colonoscopy in elderly

Thais. Due to the higher incidence of left-sided tumors, the protocol for screening for Thais may require only a sigmoidoscopy.

Peer review

This study provides the interesting differences in clinical characteristics,

presentations and findings of colorectal neoplasm in young and elderly Thais. However, due to the limited data from this retrospective format, there is a need for further prospective studies to address many unanswered questions, especially "what are the most appropriate age and tool for colon cancer screening for Asians?".

S- Editor Wang GP **L- Editor** Ma JY **E- Editor** Bai SH