Research Article

Retrospective study in correlation of age and precancerous colorectal polyps for screening colonoscopy in BMA General Hospital

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Abstract

Background: Colorectal cancer is one of the five most common cancers in Thailand. Early detection of a precancerous lesion can reduce morbidity and mortality rate. The feasible procedure for colorectal cancer screening frequently performed by colonoscopy, that can also safely use for diagnosis and further intervention in the same setting. According to the latest NCCN guideline for colorectal cancer screening, the current criteria for screening colorectal cancer is started at age 45 compared to the previous criteria at age 50. However, the rate of precancerous lesion detection in patients below the age of 50 in an Asian population is still unknown. Therefore, our study aims to find the prevalence of a precancerous lesion in various age groups to support evidence of necessary colonoscopy.

Method: We conducted a retrospective observational study of all adult patients who received colonoscopy in BMA General Hospital from January 2020 to January 2022. Patients who have previous colectomy, concomitant cancer, incomplete colonoscopy, or poor bowel preparation were excluded. The colonoscopy and pathological results from polypectomy were reviewed and analyzed correlated with patient's age.

Results: We reviewed 1,217 patients, and 901 patients were included. The polyps were found in 375 patients (41.6%). Precancerous polyps were found in 195 patients (21.6%). There was a strong correlation between increasing age and the presence of a precancerous lesion. The increasing prevalence of precancerous lesion were found in age 40 and above, and strongly significant increasing in age 45 and above. The prevalence of precancerous polyp was found 23.5%, significantly higher than the younger patients.

Conclusions: Prevalence of precancerous lesion was found to be increasing, that associated with patients aged 40 and above, and strongly significant in patients aged 45 and above. Prevalence of precancerous polyp was found almost one-fourth of patients aged 45 and above.

Keywords: Colorectal cancer screening, Colonoscopy, Polyp

INTRODUCTION

Colorectal cancer is one of the five major cancer patients found in Thailand, which ranked as 3rd in male and 2nd in female populations. Annually, we would find more than 10,000 new colorectal cancer patients, and around 5,000 colorectal cancer patients will pass away due to this disease.[1, 2] Colorectal cancer derived from the abnormal growth of epithelial lining of colorectal wall, which if formed into polyps, indicate possibility to be precancerous lesion. The polyp can be visible by colonoscopy, and also can be evaluated characteristics and potentiality to be cancer. Ideally, we would like to find the polyp prior to develop malignant lesion.[3] Colonoscopy is a very safe practice, with rare serious complications especially performed by experienced endoscopist.[4]

Previously, colonoscopy screening is recommended in patient at age 50 and above according to guideline issued by National Comprehensive Cancer Network (NCCN), but in updated guideline recommended to start regular screening at age 45.[5] For many reasons such as lifestyle changing among people in the modern era, it is common to find cancer in younger patients, with tendency to be younger demographic as time goes by. This reason leads an idea to research on younger demographic to find the correlation of age and prevalence of precancerous lesion.[6]

MATERIAL AND METHOD

The research was retrospective study, by reviewing patient recorded data, who received colonoscopy screening at Bangkok Metropolitan Administration (BMA) General Hospital from January 2020 to January 2022. The information included patient characteristics and findings of polyps from colonoscopy.

ELIGIBILITY CRITERIA AND STUDY SELECTION

Initially, the study included all patients who received colonoscopy screening at BMA General Hospital from January 2020 to January 2022. After reviewing the patient recorded data, we excluded the patients who got previous colectomy or presented with concomitant cancer. We also excluded the patients who cannot be performed complete colonoscopy (cecal intubation) or poor bowel preparation (Boston Bowel Preparation Scale < grade 2) that may lead to obscuring the polyps.

STATISTICAL ANALYSIS

All data was analysis by SPSS software and presented according to data types

1) Quantitative data – age and polyps, was presented in numbers, percentage, means, SD, median, percentile (IQR), and highest/lowest data. Finding statistic correlation using independent t-test, in case of abnormal distribution uses statistic Man-Whitney U-test (if divided age group into 2 groups of any cut-off age), One-Way ANOVA statistic, Kruskal Wallis Test statistic, Bonferroni's Post hoc analysis (if divided age group into 2 groups, < 40, 40-49, and $\geq$ 50 years or divided into 4-5 groups), considering statistically significant when $p\text{-value} < 0.05$

2) Qualitative data – age group and sex, was presented using percentage, testing statistical correlation by using Chi-square test, in case of expected cell less than 5 more than 25% consider using Fisher Exact test.

RESULTS

Of all 1,217 patients who received colonoscopy screening at BMA General Hospital, 316 patients were excluded by exclusion criteria. There were 389 male patients and 512 female patients, considered as 43.2% and 56.8% respectively. Mean age of patients in this study was 60.49 ±12.94 years old (range from 20-102 years old) included 21 patients aged between 20-29, 39 patients aged between 30-39, 99 patients aged between 40-49, 244 patients aged between 50-59, 261 patients aged between 60-69, 190 patients aged between 70-79, and 47 patients aged over 80. Polyps were founded 375 of all 901 patients, considered as 41.6% (Table 1). The prevalence of polyps classified by age group was shown in Table 2.

After we examined 901 patients, we found 375 patients with 407 colorectal polyps, 195 patients had precancerous polyps, 178 patients had non-precancerous polyps, and 2 malignant polyps were found in 2 patients, considered as 52%, 47.5%, and 0.53% respectively. Age range used in statistical correlation calculation cut point level grouped were 40, 45 and 50 years old (Table 3).

Table 1 Baseline characteristic of patients (n=901)

	Values (n=901)	
	n	**%**
Gender		
Male	389	43.2%
Female	512	56.8%
Age (year)		
20-29	21	2.3%
30-39	39	4.3%
40-49	99	11.0%
50-59	244	27.1%
60-69	261	29.0%
70-79	190	21.1%
≥80	47	5.2%
Mean ±SD	60.49	±12.94
Median (min-max)	61.0	(20-102)
Bowel Preparation Quality		
Excellent	374	41.5%
Good	527	58.5%
Polyps		
Present	375	41.6%
Absent	526	58.4%

DISCUSSION

This retrospective study conducted in BMA General Hospital by analyzing the recorded data of patients who received colonoscopy focusing on polyp prevalence correlated by patient age group.

In our study, the data showed majority of patients underwent colonoscopy aged 50 and above (82.4%), in contrast there were only 17.6% of patients aged under 50. And there were less number of patients aged under 40, only 6.6%. The quality of polyp detection in this study is quite high (41.6%) compared to standard polyp detection rate (20-30%) in previous study.[7] Even high polyp detection rate, but actually we lacked of some data of polyp characteristics such as evaluation of potential cancer risk from colonoscopy reports, thus we can only review from pathological reports. Furthermore, polyp management and follow up may have variation methods among individual endoscopists.

Table 2 Prevalence of polyps according to age (n=901)

	Polyps (n=375)		No polyps (n=526)		p-value
	n	%	n	%	
Age (year)					<0.001*
20-29	4	19.0%	17	81.0%	
30-39	10	25.6%	29	74.4%	
40-49	31	31.3%	68	68.7%	
50-59	86	35.2%	158	64.8%	
60-69	125	47.9%	136	52.1%	
70-79	96	50.5%	94	49.5%	
≥80	23	48.9%	24	51.1%	
Age (year)					<0.001*
<40	14	23.3%	46	76.7%	
40-49	31	31.3%	68	68.7%	
50-59	86	35.2%	158	64.8%	
≥60	244	49.0%	254	51.0%	
Age (year)					0.003*
≥40	361	42.9%	480	57.1%	
<40	14	23.3%	46	76.7%	
Age (year)					<0.001*
≥50	330	44.5%	412	55.5%	
<50	45	28.3%	114	71.7%	

p-values from Chi-square test, * Significance at the 0.05 level

Table 3 Prevalence of precancerous according to age (n=901)

	precancerous (n=195)		No precancerous (n=706)		p-value
	n	%	n	%	
Age (year)					0.004*
<40	4	6.7%	56	93.3%	
≥40	191	22.7%	650	77.3%	
Age (year)					<0.001*
<45	8	7.7%	96	92.3%	
≥45	187	23.5%	610	76.5%	
Age (year)					<0.001*
<50	15	9.4%	144	90.6%	
≥50	180	24.3%	562	75.7%	

p-values from Chi-square test, * Significance at the 0.05 level

After classified by age group, the prevalence of polyps was found significantly increasing between groups. Although higher statistically significant prevalence at the cut-off age between patients aged above 40 and aged under 40 cannot be classified and calculated by statistical techniques due to limited number of patients.

Focusing on the polyps that have potential to develop malignant lesions (precancerous polyps), this study demonstrated significantly higher prevalence of precancerous polyps in age 40 and above (22.7%) and strongly significant in age 45 and above (23.5%). That percentage almost reached one-fourth of patients in this group.

Limitation of this study were retrospective study that have limited number of patients, especially in age under 40. Thus, this study was the one of evidence to support prevalence of colorectal polyp which increase as correlated with age, and may lead to conduct more study for evaluation necessity of colonoscopy in younger dermographic.

CONCLUSIONS

Prevalence of precancerous polyps was found to be increased as correlated with patients aged 40 and above, and strongly significant in patients aged 45 and above. Polyps were found in almost one-fourth of patients aged 45 and above.

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