Result of Screening Colonoscopy Among Person with Positive FIT (Fecal Immunochemical Test) in Prachuapkhirikhan Hospital

ผลการส่องกล้องตรวจลำไส้ใหญ่ในผู้ที่มีผลบวกจากการตรวจเลือดแฝงในอุจจาระด้วยวิธีทางอิมมูโนเคมิคอล ของโรงพยาบาลประจวบคีรีขันธ์

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Abstract

Objective: The aim was to find the false positive rate and positive predictive value of fecal immunochemical test (FIT) positive patients for detecting polyps at risk of transformation (advance adenomas) and colorectal cancer (CRC).

Methods: A retrospective study was done among patients at the age of 50-70 years who had positive FIT in CRC screening program followed by colonoscopy at Prachuapkhirikhan Hospital from 1 September 2018 to 31 March 2020. The data included baseline characteristics, colonoscopic findings and pathological reports.

Results: A total of 367 patients positive FIT were followed by colonoscopy at Prachuapkhirikhan Hospital. Fifty-five patients (15.0%) were excluded from study due to age, history of colorectal surgery, previous colonoscopy in 5 years, and loss of pathologic reports. A false positive rate was 41.7%. Of total 58 percent of positive predictive value, 13.8% were benign polyps, 28.5% were advance adenomas, 7.1% were CRC, and 9.0% were diverticular diseases.

Conclusion: Nationwide CRC screening program in Prachuapkhirikhan Hospital has 35.6% positive predictive value to detect CRC and polyp at risk of transformation which can be to the benefit in treatment of colorectal cancer while false positive rate was 41.7%.

Keywords : FIT, CRC, polyp, advance adenoma, colonoscopy, screening, Thailand
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บทคัดย่อ

วัตถุประสงค์: เพื่อค้นหาค่าผลบวกลวง และค่าการทำนายผลบวกในผู้ที่มีผลบวกจากการตรวจเลือดแฝงในอุจจาระด้วยวิธีทางอิมมูโนเคมิคอล และได้รับการส่องกล้องตรวจลำไส้ใหญ่

วิธีการศึกษา: เป็นการศึกษาเชิงวิเคราะห์แบบย้อนหลัง โดยศึกษาในผู้ที่มีอายุ 50-70 ปี ที่มีผลบวกจากการตรวจเลือดแฝงในอุจาระด้วยวิธีทางอิมมูโนเคมิคอล และได้รับการส่องกล้องตรวจลำไส้ใหญ่ ณ โรงพยาบาลประจวบคีรีขันธ์ ตั้งแต่ 1 กันยายน 2561 ถึง 31 มีนาคม 2563 โดยเก็บรวบรวมข้อมูล สถานภาพของกลุ่มประชากร ผลการส่องกล้องตรวจลำไส้ใหญ่ และผลรายงานทางพยาธิวิทยาของผู้เข้ารับการตรวจ

ผลการศึกษา: จากผู้ที่มีผลบวกจากการตรวจเลือดแฝงในอุจาระด้วยวิธีทางอิมมูโนเคมิคอล และได้รับการส่องกล้องตรวจลำไส้ใหญ่ ณ โรงพยาบาลประจวบคีรีขันธ์ 367 ราย พบมี 55 ราย ได้ถูกคัดออกจากการศึกษา เนื่องจากอายุ ประวัติการผ่าตัดลำไส้ ประวัติการเข้ารับการส่องกล้องตรวจลำไส้ใหญ่ภายใน 5 ปี และจากการสูญหายของรายงานผลพยาธิวิทยา พบค่าผลบวกลวงเท่ากับร้อยละ 41.7 ค่าการทำนายผลบวกพบ ติ่งเนื้อปกติร้อยละ 13.8 ติ่งเนื้อที่มีความเสี่ยงของการกลายเป็นมะเร็งร้อยละ 28.5 มะเร็งลำไส้ใหญ่ร้อยละ 7.1 และโรคของกระเปาะลำไส้ใหญ่ร้อยละ 9.0

สรุป: การตรวจคัดกรองมะเร็งลำไส้ใหญ่ของโรงพยาบาลประจวบคีรีขันธ์พบค่า การพยากรณ์ผลบวกคิดเป็นร้อยละ 35.6 ในการตรวจพบรอยโรคติ่งเนื้อที่มีความเสี่ยงของการกลายเป็นมะเร็ง และมะเร็งลำไส้ใหญ่ ซึ่งเป็นประโยชน์ในการรักษามะเร็งลำไส้ใหญ่และไส้ตรง ในขณะที่พบผลบวกลวงได้ร้อยละ 41.7

คำสำคัญ : การตรวจเลือดแฝงในอุจาระด้วยวิธีทางอิมมูโนเคมิคอล มะเร็งลำไส้ใหญ่และไส้ตรง ติ่งเนื้อลำไส้ใหญ่ ติ่งเนื้อลำไส้ใหญ่ที่มีโอกาสกลายเป็นมะเร็ง การส่องกล้องตรวจลำไส้ใหญ่ การคัดกรอง ประเทศไทย

วารสารแพทย์เขต 4-5 2564 ; 40(2) : 193-200.

Introduction

Colorectal cancer (CRC) is the 3rd most common cancer in Thailand with an incidence of 16.2/100,000 men and 11.2/100,000 women as reported by Nationwide Cancer Institute in 2018.[1] Due to lack of colorectal cancer screening and people awareness, early stage colorectal cancer only found about 20-30% of overall colorectal cancer cases in Thailand. The incidence of colorectal cancer staging in patient with newly diagnosed colorectal cancer is 4-9% for stage I, 17-22% for stage II, 31-37% for stage III, and 32-40% for stage IV.[2,3] While morbidity and CRC-related mortality increase by stage of disease, the benefit of nationwide colorectal screening program in order to identify asymptomatic persons with advance adenomas and/or early cancer to reduce morbidity and colorectal cancer related mortality. This program was based on two steps: first the use of fecal immunochemical test (FIT) to identify a patient who has blood in stool and then the performance of colonoscopy if FIT was positive.

In the past we used the fecal occult blood test (FOBT) for screening method, it required three stool samples for analysis and

various factors based on lack of sensitivity & specificity[4,5], cost effectiveness, and the compliance of the test. Therefore fecal immunochemical test (FIT) was developed. It detects small amounts of blood in stool sample using antibody targeting hemoglobin. This test is performed on one sample of stool and shows the better participation and sensitivity & specificity of colorectal cancer up to 61.3%.[4,6,7] It was shown benefit of colorectal screening program with FIT.[8,9]

A nationwide Thailand colorectal screening program was launched in October 2017 for asymptomatic participants aged 50-70 years using one-time quantitative fecal immunochemical test (FIT). The positive FIT patients underwent colonoscopy program. In Prachuap Khiri Khan this colorectal screening program has started from September 2018 until now.

Objective

The purpose was to study false positive rate and positive predictive value of FIT positive patients for detecting polyps at risk of transformation (advance adenomas) and colorectal cancer.

Method

We performed a retrospective observational study in Prachuapkhirikhan Hospital. Data were collected from patients who had positive FIT and received a colonoscopy program in Prachuapkhirikhan Hospital from 1 September 2018 to 31 March 2020. All colonoscopies were performed by 4 surgeons who worked at Prachuapkhirikhan Hospital.

Outcome and analysis

Data were collected to assess false positive rate and positive predictive values for colorectal lesions. Main colorectal lesions described in our study were defined as polyps (hyperplastic and/or adenomas) and colorectal cancer (CRC). Polyps with risk of transformation called advance adenomas were defined as polyps with size of 10 mm and/or larger or histology showing villous component or high grade dysplasia.

The positive predictive value was calculated as number of patients with colorectal lesions divided by the number of patients who had positive FIT and underwent colonoscopy. False positive rate were calculated as the number of patients with a normal colonoscopy divide by the number of patients with a positive FIT and underwent colonoscopy.

Results

In Prachuap Khiri Khan from 1 September 2018 to 31 March 2020. There were 367 patients eligible for colonoscopy after positive FIT. There were 55 patients to be excluded. The main reason for exclusion was the age below 50 or more than 70 years (76.4%). Other causes of exclusion were due to history of previous colorectal surgery (9.1%), previous colorectal screening in 5 years (7.3%), and loss of pathological report (7.3%) as Figure1.

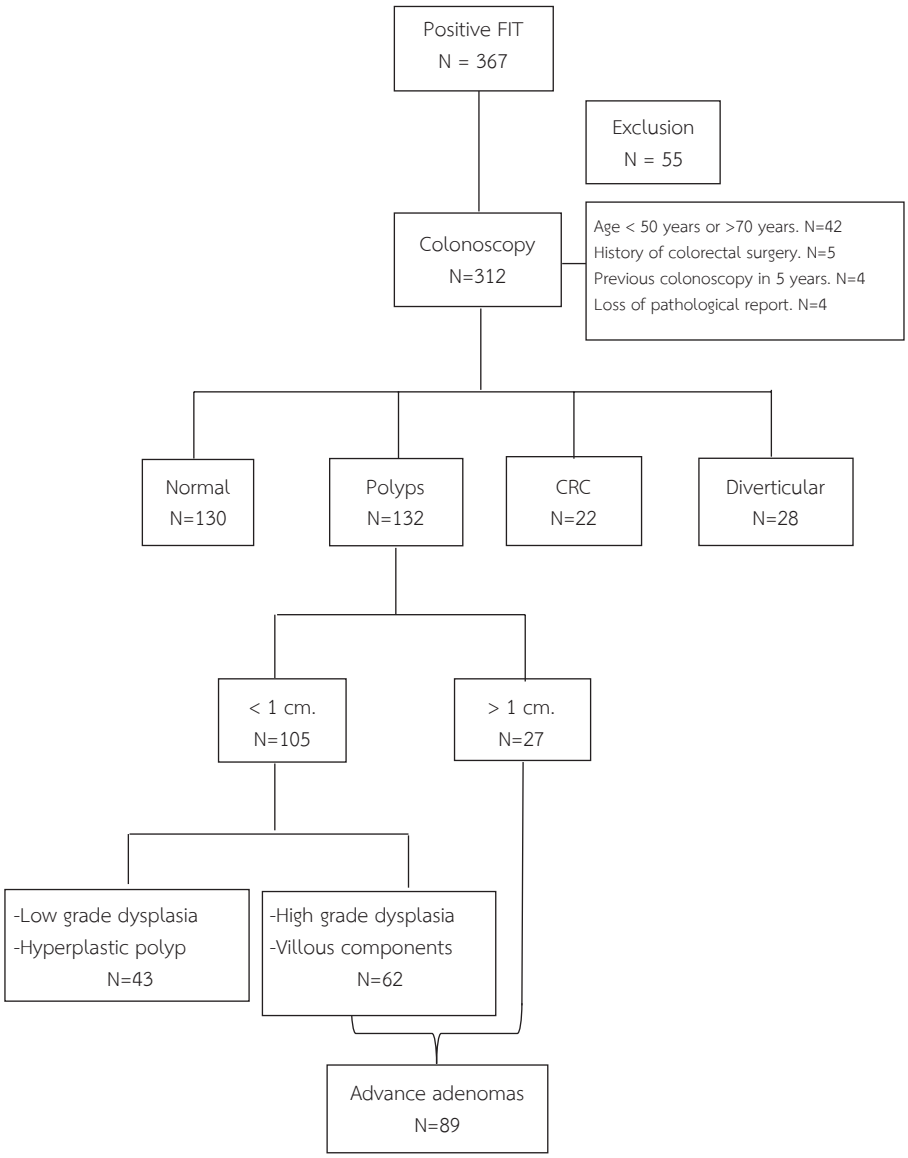

Figure 1 Flow chart of population in colonoscopy program with positive FIT in Prachuapkhirikhan Hospital.

Baseline characteristics of study population were shown as Table1. After exclusion, 312 patients in this study were found to be male (36.9%) and 63.1% of them were female. Mean age was 58.36 years. Underlying diseases of patients in this study were hypertension 26.3%, diabetic mellitus 14.4%, and others were seen in Table1. Most of them did not smoke (89.7%) and did not drink alcohol (85.9%).

Table 1 Characteristics of study population

	Number of patients (N=312)	Frequency (%)
Sex		
Male	115	36.9
Female	197	63.1
Age (Mean age = 58.36years)		
50-59 years	167	53.5
60-70 years	145	46.5
Underlying disease		
Diabetic mellitus	45	14.4
Hypertension	82	26.3
CAD	10	3.2
CVA	2	0.6
CKD	1	0.3
Liver disease	1	0.3
Alcohol		
Yes	44	14.1
No	268	85.9
Smoking		
Yes	32	10.3
No	280	89.7

All polyps and colorectal cancer in this study were located at sigmoid colon 39.0%, rectum 27.0%, descending colon 19.0%, and other seen as Figure2.

Polyps at risk of transformation and colorectal cancer are shown as Figure3. Most of them found at left side colon (27.0% rectum, 43.0% sigmoid colon, and 13.5% descending colon) while found at right side colon only 11.7% (3.6% caecum, 5.4% ascending colon, and 2.7% hepatic flexure colon).

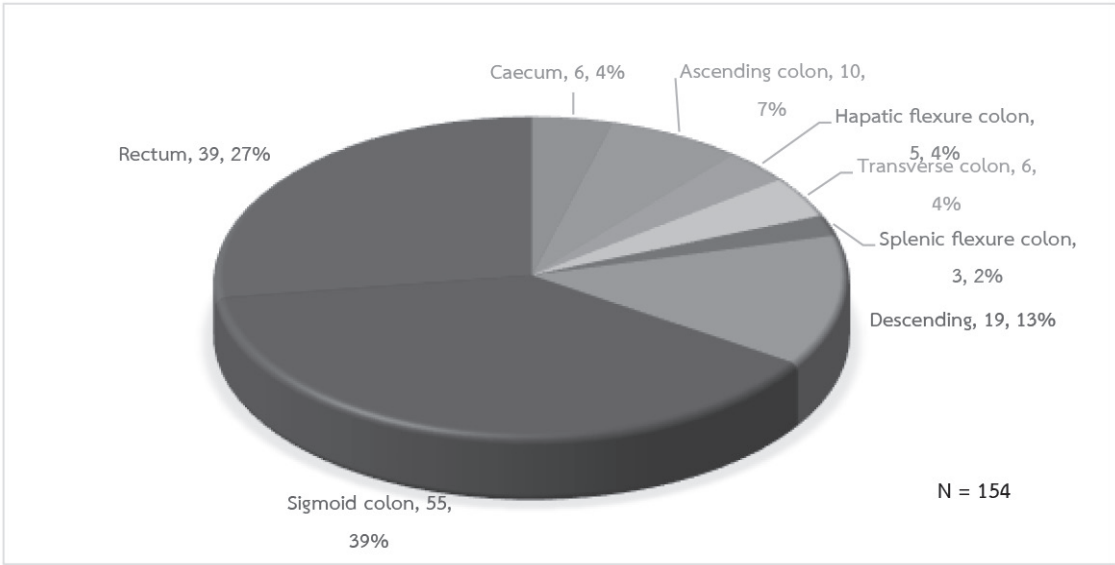

Figure 2 Location of polyps and CRC in colonoscopic finding

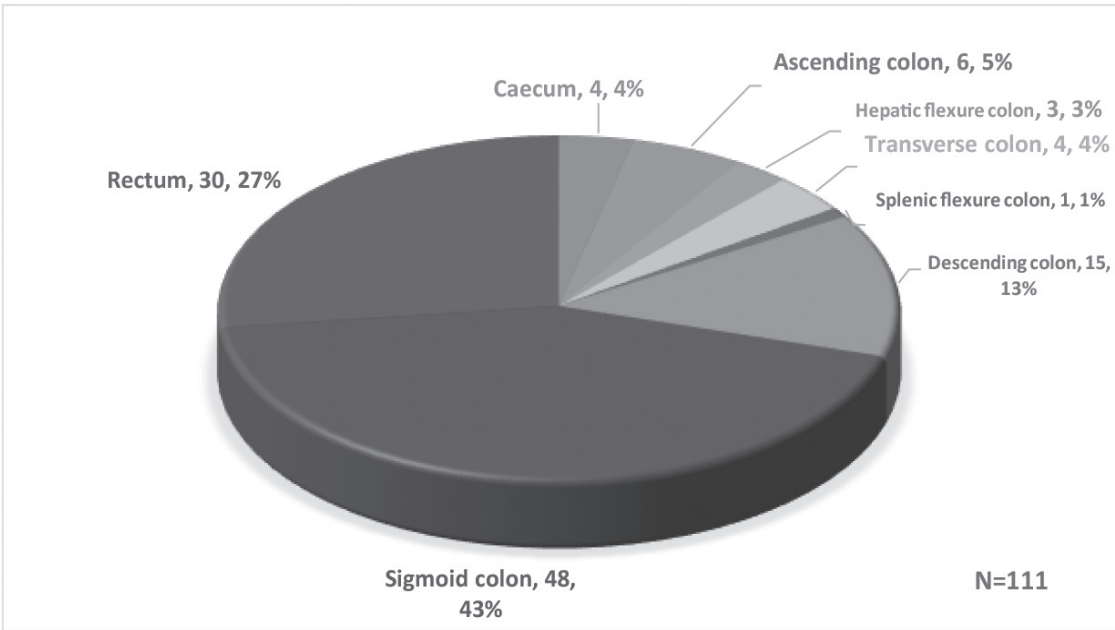

Figure 3. Location of advance adenoma and CRC in colonoscopic finding

Positive predictive value and false positive rate

Despite normal colonoscopy, the false positive rate were 41.7%. A total 182 of colorectal lesions were encountered including 43 adenomas, 89 advance adenomas, 22 colorectal cancer (CRC), and 28 diverticula. Percent of positive predictive value in our population for benign polyps were 13.8%, advance adenomas were 28.5%, colorectal cancer were 7.1%, and diverticular were 9.0% as shown in Table1.

The percent of detection polyps at risk of transformation and colorectal cancer were 35.6% of all patients with positive FIT as shown in Table 2.

Table 2 Percent of positive predictive rate (PPV) encountered colorectal lesions

Colorectal lesions	Positive predictive values (%)	N
Normal colonoscopy	41.7	130
Benign polyps	13.8	43
Advance adenomas	28.5	89
CRC	7.0	22
Diverticular	9.0	28
CRC+ advance adenomas	35.6	111

Discussion

In this study, percentage of positive predictive rate of polyps at risk of transformation and CRC were 28.5% and 7.1% respectively. This showed benefit of colorectal screening program in the detection of early colorectal cancer and precancerous lesion (35.6%) to reduce colorectal cancer morbidity and mortality in Thailand.

While the cost of FIT test is cheap and the result of testing is good. Recommendation to colorectal screening program should be extended the time and age group to increase benefit among people.

Most of colorectal lesions were located in left side colon (sigmoid colon 39.0%, rectum 27.0%, descending colon 19.0%). Polyps at risk of transformation and colorectal cancer in this study could be found by flexible sigmoidoscopy about 70.0% (27.0% rectum, 43.0% sigmoid colon). In the place where lack of endoscopist, flexible sigmoidoscopy may be helpful to decrease the time and increase the number of patients to screening.

The colonoscpies in this study were only performed by 4 surgeons, this showed a lot of numbers and workload to surgeons who have a lot of work in Thailand and it should be better if we can save the surgeons in rural hospitals or increase the number of endoscopists to decrease the waiting time and overcrowding in hospitals.

Another limit action in this study was that we cannot study in participant rate and detection rate of FIT test due to many units organized to collect and recruit data. This is a space for improvement of colorectal screening program to develop.

Conclusion

Nationwide colorectal cancer screening program in Prachuapkhirikhan Hospital has 35.6% positive predictive value to detect colorectal cancer and polyps at risk of

transformation which could be benefit in early treatment of colorectal cancer to reduce morbidity and mortality in Thailand, while false negative rate were 41.7% meaning almost half have normal colonoscopy.

This study shown the benefit of nationwide colorectal screening program by using FIT plus colonoscopy. As surgery remains the main treatment of colorectal cancer if we can early detection of cancer at the time before advance stage, morbidity and CRC-related mortality should be reducing and result in better clinical outcome and quality of life. The recommendation of colorectal screening program and endocopist is the key to success in colorectal cancer treatment in Thailand.

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