
SURVEY THE RELATIONSHIP BETWEEN FECAL OCCULT BLOOD TEST WITH COLORECTAL POLYPS IN 510 WORKERS AT TAN CANG MEDICAL CENTER

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ABSTRACT: *Retrospective review of medical records of 510 workers who had positive fecal occult blood test results and had a colonoscopy to screen for colorectal polyps, at Tan Cang Medical Center, from March 2019 to December 2020.*

Results: *The average study subjects were 44.4 ± 8.1 years old; the proportion of men (83.9%) is higher than that of women (16.1%). In 510 study records, 14.1% of cases had a family history of gastrointestinal diseases; 62.1% had clinical symptoms (abdominal pain, diarrhea, constipation, digestive disorders, bloody stools); 53.5% had positive fecal occult blood test once and 46.5% had positive result twice. Through screening colonoscopy, 212 out of 510 cases (41.6%) were detected with colorectal polyps. The analysis showed that people with a positive fecal occult blood test twice were 9.22 times more likely to have colorectal polyps than those with a positive test result once; statistical significance with $p < 0.001$.*

Keywords: Fecal Occult Blood, colon polyps, Tan Cang Medical Center.

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1. INTRODUCTION.

According to Globocan statistics (about 36 cancers in 185 countries) in 2020, colorectal cancer is the most common cancer, with an incidence rate of about 10% and a mortality rate of 9.4% [9]. In Vietnam, the incidence of colorectal cancer ranks sixth among all cancers in both men and women [1]. Colorectal cancer often begins with an abnormally proliferative mass (polyp); then, develops into cancer cells [1]. Colorectal polyps can be detected early and resected through endoscopic colonoscopy, preventing adverse progression. However, the endoscopic colonoscopy technique is not suitable when it is widely used for screening purposes in the community.

In the United States, the fecal occult blood test is so far commonly used in screening and early detection of tumors in the gastrointestinal tract. The sensitivity of this technique in detecting colon tumors from 21-81% [7]. The early detection and timely treatment of colorectal cancer help more than 90% of the patients (detection of the disease at an early stage) live well after 5 years, about 35-60% of patients have lymph

node metastasis and less than 10% of patients have lymph node distant metastasis [2]. In Vietnam, there are not many studies concerning fecal occult blood testing in primary health care, including periodic health examinations.

Tan Cang Medical Center is a medical unit under Saigon Newport Corporation, whose main task is to take care of the health of more than 9,000 personnel, officials, workers (hereafter referred to workers). Here, the gastrointestinal endoscopy technique has been implemented since 2017. By March, 2019, the technique of the fecal occult blood test had become a part of the routine health examination process of workers. There are two methods of certain significance in detecting and diagnosing gastrointestinal tumors, including colorectal polyps. However, the results of these techniques in patients are related to each other, very few studies mention it.

Stemming from the above reasons, we carried out this study to find out the relationship between the fecal occult blood test and colorectal polyps in workers at Tan Cang Medical Center.

2. SUBJECTS, METHODS OF THE STUDY.

2.1. Subjects of the study:

510 workers had periodic health examinations at Tan Cang Medical Center, had positive fecal occult blood test results and had a colonoscopy to screen for colorectal polyps.

Select the workers, who have health records that fully meet the research criteria and had a periodical health examination at Tan Cang Medical Center from March, 2019 to December, 2020.

2.2. Methods of the study:

- Study design: retrospective, cross-sectional description.

- Sample size: apply the formula to calculate sample size:
$$n = Z_{1-\alpha/2}^2 \frac{p(1-p)}{d^2}$$

In which, $p = 0.10$ (according to Bui Minh Nhat's study [4]), $\alpha = 0.05$ (corresponding to 95% reliability, we have $Z_{1-\alpha/2} = 1.96$); d is the absolute error, choose $d = 0.05$. Substitute into the above formula, we get $n = 139$. In fact, the sample size in this study was 510 workers.

- Test for fecal occult blood according to the rapid test KIT technique for the qualitative detection of fecal occult blood (FOB) according to the instructions of ABON. The test was performed first in the workers when they attended a routine health examination and a second test one week later for those, who had the first positive fecal occult blood test.

- Colonoscopy was performed on the endoscope of Olympus CV-170, flexible colonoscopic tube CF-H170I, diagnose of colorectal polyps according to WHO standards in 2019 on the histopathological classification of colorectal polyps and histopathological classification according to Vienna.

- Research indicators:

+ The characteristics of the workers: age, sex, family history of gastrointestinal diseases, clinical symptoms, test results for fecal occult blood, and colonoscopy results.

+ The relationship between the positive fecal occult blood test, and colonoscopy screening results for colorectal polyps in research workers.

- Data processing: by STATA 14.2 software. Data

are expressed as mean \pm median, the standard deviation for quantitative variables, and frequency, the percentage for qualitative variables. The study used the Chi-square test to find the relationship, the level of statistical significance when $p < 0.05$. The association estimate was reported as the odds ratio OR with a 95% reliability interval.

- The ethical problem in research: the research protocol has been approved by the leaders of Tan Cang Medical Center. All personal information of workers was kept confidential and only serves scientific tasks.

3. RESULTS OF THE STUDY.

3.1. Characteristics of the workers (n = 510):

- Age: workers were from 23-60 years old, the average age was 44.4 ± 8.1 years. In which: 364 workers (71.4%) under 50 years old; 146 workers (29.6%) from 50 years old and over.

- Gender: 428 workers (83.9%) are male and 82 workers (16.1%) are female.

- Family history: 72/510 workers (14,1%), family member have gastrointestinal disease.

- The clinical symptoms of digestive diseases of workers:

+ No symptoms: 173 workers (33.9%).

+ Abdominalgia: 43 workers (8,4%).

+ Diarrhea: 125 workers (24,5%).

+ Constipation: 22 workers (4,3%).

+ Digestive disorders: 119 workers (23,3%).

+ Bloody stools: 28 workers (5,5%).

- The results of fecal occult blood test and colonoscopy to screen for colorectal polyps:

Table 1. The results of fecal occult blood test and colonoscopy to screen for colorectal polyps.

Fecal occult blood test	Results of colorectal endoscopy		Total
	Have polyp	No polyp	
Positive once	51 (24.1%)	222 (74.5%)	273 (53.5%)
Positive twice	161 (75.9%)	76 (25.5%)	237 (46.5%)
Total	212 (41.6%)	298 (58.4%)	510 (100%)

Among 510 workers, 53.5% of workers had positive fecal occult blood test once and 46.5% of workers had positive fecal occult blood test twice; At the same time, there were 212 workers (41.6%) through screening colonoscopy detected with colorectal polyps.

3.2. The relationship between the fecal occult blood test and colonoscopy screening results for colorectal polyps:

Table 2. The relationship between the fecal occult blood test and colonoscopy screening results for colorectal polyps (n = 510).

Fecal occult blood test	Result of colorectal colonoscopy		OR (CI95%)	p
	Have polyp	No polyp		
Positive twice	161 (67.9%)	241 (56.3%)	9.22 (6.01-14.18)	< 0.001
Positive once	51 (18.7%)	57 (69.5%)		

Workers with a positive fecal occult blood test twice were 9.22 times more likely to have colorectal polyps than those with a positive test result once; statistical significance with $p < 0.001$.

4. DISCUSSION.

4.1. The characteristics of the patients:

Tan Cang Medical Center is stationed in the area with many developed medical and health care services. In 2017, the Center implemented a gastrointestinal endoscopy technique to screen and detect colorectal polyps early. However, at present, the designation of this technique is not suitable when it is widely implemented in the community, including in periodic health examinations for all workers. In March 2019, Tan Cang Medical Center implemented the technique of fecal occult blood test into the routine health examination process for workers. From 2019 to 2020, the Center performed fecal occult blood tests for nearly 8,000 workers, of which 510 cases with positive fecal occult blood. This is a suggestion for medical doctors to have more technical indications to screen for gastrointestinal tumors. All these cases were then assigned endoscopic screening for colorectal polyps. Therefore, we carried out a study to evaluate the relationship between a positive fecal occult blood test and colonoscopy screening results for colorectal polyps in workers with a positive fecal occult blood test.

The results of the study showed that the workers were from 23-60 years old, the average age was 44.4 ± 8.1 years. The majority of workers were men (83.9%); suitable for the labor needs of Saigon Newport Company. 14.1% of workers have a family history of gastrointestinal diseases. Clinically, 33.9% of workers had no symptoms of gastrointestinal diseases; However, there were symptoms of diarrhea (24.5%), digestive disorders (23.3%), abdominal pain (8.4%), and especially, up to 5.5% of workers detected bloody stools.

Among 510 workers with a positive fecal occult blood test, who tested for fecal occult blood, 273 workers (53.5%) had positive fecal occult blood test once (in which, 51 cases were detected colorectal polyps through screening colonoscopy); 237 workers

(46.5%) had positive fecal occult blood test twice (in which, 161 cases were detected colorectal polyps through screening colonoscopy). This result is consistent with the study of Ahmad M. (among the cases of positive fecal occult blood test until the colonoscopy, 56.2% of patients had positive fecal occult blood test once, 20.5% of patients had positive fecal occult blood test twice), 17.6% of patients had positive fecal occult blood test three times and 4.7% positive unspecified [5]). The difference in the number of times of testing for fecal occult blood may be the research of Ahmad M. implemented in colorectal cancer screening subjects, so regular tests were required to detect abnormalities and colonoscopy to detect cancer. [5], while Tan Cang Medical Center is a primary health care unit that only carries out screening measures to transfer to specialized facilities for treatment and care.

The results in Table 1 showed that, among 510 workers, who had a positive fecal occult blood test, 212 workers (41.6%) detected colorectal polyps by colonoscopy. This result was higher than the study of Bui Minh Nhat (25.8%).

4.2 The relationship between the positive fecal occult blood test and colonoscopy screening results for colorectal polyps:

The results of Table 2 showed that the workers with a positive fecal occult blood test twice were 9.22 times more likely to have colorectal polyps than those with a positive test result once. This result was consistent with the study of Ahmad M et al (2013) when it was announced that people with a positive fecal occult blood test twice and three times were likely to be detected colorectal cancer through colonoscopy was 3.0 times and 6.5 times higher than those with results of positive fecal occult blood test once [5]. Some studies showed that, more times the results of the fecal occult blood test, then higher the ability to detect abnormalities during colonoscopy. This was a valuable suggestion towards the appointment of colonoscopy for those who have positive fecal occult blood test results once or twice, to optimize screening efficiency and save money. This problem needs further attention and intervention studies in the future.

5. CONCLUSION.

Study on the 510 workers with positive fecal occult blood test results and had a colonoscopy to screen for colorectal polyps at Tan Cang Medical Center, results:

- The average age of workers was 44.4 ± 8.1 years. The workers were men (83.9%) more than women (16,1%). 14.1% of workers have a family history of gastrointestinal diseases. 62.08% of workers have symptoms of gastrointestinal diseases (abdominal pain, diarrhea, constipation, digestive disorders, bloody stools).

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