MedLife Open Access

Is fecal occult blood testing suitable for screening colorectal cancer in Egypt?

Esam F. Ebied, Mohammed Nada, Tarek Youssef, Hossam Fakhery Ebied, Salah Raslan[1] and Ahmed A. Abou Zeid
Ain Shams University, Cairo, Egypt

ABSTRACT

BACKGROUND AND STUDY AIM: Colorectal cancer is not uncommon problem in Egypt. Different screening methods are used for colorectal cancer screening, and one of these is the detection of fecal occult blood; so we planned our study to determine whether fecal occult blood testing (FOBT) is suitable for screening colorectal cancer in Egypt.

PATIENTS AND METHODS: This pilot study recruited 200 subjects to test their feces for occult blood. After obtaining the ethical committee approval and signed informed consent from all the patients, all data were coded and stored on password-protected computers. Hema-Screen test slide (a guaiac-based method) was used. Only one fecal sample was taken from every subject.

RESULTS: Twenty-four percent of screened subjects had positive test results, and none of them had tumors. Fifty percent of the positive results was due to endemic diseases that cause chronic gastrointestinal blood loss.

CONCLUSION: FOBT is not a suitable screening method for colorectal cancer in Egypt.

INTRODUCTION

Colorectal cancer (CRC) is the third most common cancer in men and the second in women worldwide, and about 608,000 deaths from CRC are estimated worldwide, accounting for 8% of all cancer deaths, making it the fourth most common cause of death from cancer.[1]

Unfortunately, the Egyptian cancer registries does not provide enough data, but based on the National Cancer Institute cancer registry in 2003, CRC accounted for 23.4% of the gastrointestinal tract malignant cases discovered during this period, and also colorectal carcinoma is the sixth cancer among males and females in Egypt.[2]

Fortunately, CRC is suitable for screening because it has a long preclinical course, and it is treatable all through this course.

Different screening methods are available, and fecal occult blood testing (FOBT) is the safest and least expensive of the currently available screening tests. Different studies showed that FOBT reduces the CRC related mortality by 14% to 16% over 10–18 years.[3–5]

In Egypt, because of the prevalence of diseases that cause chronic gastrointestinal blood loss, FOBT might not be the ideal screening method for CRC. This study was conducted to answer the following question: Is FOBT suitable screening CRC in Egypt?

PATIENTS AND METHODS

This is a pilot study that recruited 200 patients (159 men and 41 women; mean age, 49 years; range, 32–65 years) who presented to the surgical outpatient clinic of El Demerdash Hospital with non-gastrointestinal complaints. Patients with one or more of the following criteria were excluded from the study:

1. Anorectal complaint
2. Frank upper or lower gastrointestinal bleeding
3. Known chronic liver disease
4. Age less than 30 years

Publisher Name: MedText Publications
Manuscript compiled: Friday 09th February, 2018
[1]Corresponding author: Ain Shams University, Cairo, Egypt.
E-mail: salah_raslan1@yahoo.com

Patients were informed about the background and aim of this study, and after obtaining the ethical committee approval, they signed an informed consent, and the patients' data were coded and stored on a password-protected computers. Those who accepted to volunteer were subjected to examination of their stools for the presence of occult blood.

Fecal occult blood testing

This was performed using the guaiac-based Hema-Screen slide test (Stanbio laboratory Inc, Texas). Each slide has its own on-slide positive and negative controls to assure the accuracy of the results. Only one stool sample was taken from every volunteer. All participants were instructed to be on red meat-free high residue diet, to avoid raw fruits and vegetables that contain peroxidase-like substances (turnip, cantaloupe, banana, and radish), and to avoid tooth brushing and intake of any medications for 2 days before testing. Menstruating females were examined after they stopped bleeding.

Patients who were positive for FOBT were subjected to the following tests:

1. Complete anorectal examination
2. Anoscopy
3. Colonoscopy
4. Complete blood chemistry
5. Abdominal ultrasound
6. Stool examination for parasites

RESULTS

Two hundred patients were recruited for this pilot study, of whom 68 patients 40 years or younger. Forty-eight patients (24%) were positive for fecal occult blood. Eighteen patients (26%) and 30 patients (22%) were positive in the age categories <40 and >40 years, respectively, and the difference was not statistically significant (Z-test for comparison of proportions). The workup of FOBT-positive patients revealed the following disorders: parasitic infestation (n=17), chronic liver disease with elevated prothrombin time (PT) (n=7), hemorrhoids (n=4), chronic anal fissure (n=1), diverticular disease (n=1), and combination of more than one cause (n=5). Thirteen FOBT-positive patients had no demonstrable etiology. Colonoscopic examination failed to detect neoplastic growth in any of the FOBT-positive patients.

DISCUSSION

CRC is not uncommon in Egypt. It is the sixth most common cancer in Egypt.[2] It is now established that screening by measuring fecal occult bleeding in average-risk population can detect asymptomatic CRCs and precancerous lesions (high-risk adenomas). A number of recently reviewed randomized trials have established the efficacy of average-risk population screening using the Hemoccult II guaiac fecal occult blood test (G-FOBT) to reduce specific mortality related to CRC[6] In this pilot study, it has been shown that FOBT is not the ideal screening method for CRC in Egypt. An ideal screening method should be reasonably sensitive, so that tumors are not missed and reasonably specific to decrease the unnecessary work load of the false positive results. In this study, 24% of participants had positive result; none of them had a colonic pathology, which implies that FOBT has very low sensitivity and very low positive predictive value when applied to the Egyptian population. Although we did not investigate the FOBT-negative population to calculate the test specificity, it is our impression that again the test has very low specificity when applied to Egyptians. The results of this pilot study, if they stand for the general population, imply that one quarter of the population has been subjected to unnecessary invasive investigations.

In the Western community, it has been recommended that FOBT be applied on two different fecal samples in three different occasions to increase its sensitivity.[7] In this study, although the test was applied on only one fecal sample from every volunteer, 24% had positive result, which further emphasizes the inapplicability of the test to the Egyptian population. We also did not find significant difference between the positive rate in the age groups <40 years and >40 years, which implies that the test is unsuitable for screening in either age group.

This study can be criticized because of the small number of volunteers who have been recruited and the method of their selection. Despite this, we still think the results are highly relevant. First, more than 50% of the positive FOBT results in this study was due to chronic liver disease associated with bleeding tendency or infestation by parasites having the potential of causing gastrointestinal blood loss. Both such diseases are endemic in Egypt; hence, it would be expected to get similar results if the test is applied on a wider scale. Second, although volunteers were selected from the outpatient clinic of El Demerdash Hospital, which infers a selection bias, yet this is a big university hospital that offers free services to the population and is commonly attended by the average social classes who also represent the majority of inhabitants of this country. Finally, the exclusion criteria that have been set forward tried to imitate general population screening as much as possible.

Thirteen patients had no demonstrable colonic pathology, which might imply lack of compliance with the regulations of the test, bleeding from higher site, or parasitic infestation with failure to detect the ova in stools. We did not perform further evaluation of this group nor did we studied the group of FOBT-negative patients because this was not the original aim of this study.

Sigmoidoscopy has been suggested as a screening method by many authors. It has the advantage of being very specific; however, it is not sensitive for tumors higher than the reach of the sigmoidoscope. In view of the fact that in Egypt, more than 60% of CRCs are within the reach of the sigmoidoscope,[8,9] we believe that if CRC screening is to be applied in Egypt, sigmoidoscopy would be the method of choice. However, this needs to be evaluated in further studies.

CONCLUSION

Because of the prevalence of diseases that cause chronic gastrointestinal blood loss, FOBT is not the ideal method for screening for CRC in Egypt.

REFERENCES

1. WHO. GLOBOCAN 2008: Cancer Incidence and Mortality Worldwide. International Agency for Research on Cancer; 2010.
2. National Cancer Institute Registry Report: 2002–2003.
3. Heresbach D, Manfredi S, D'halluin PN, Bretagne JF, Branger B. Review in depth and meta-analysis of controlled trials on colorectal cancer screening by faecal occult blood test. Eur J Gastroenterol Hepatol. 2006;18(4):427–33.
4. Hewitson P, Glasziou P, Irwig L, Towler B, Watson E. Screening for colorectal cancer using the faecal occult blood test, hemoccult. Cochrane Database Syst Rev. 2007;1:CD001216.
5. Towler B, Irwig L, Glasziou P, Kewenter J, Weller D, Silagy C. A systematic review of the effects of screening for colorectal

cancer using the faecal occult blood test, hemoccult. BMJ. 1998;317(7158):559–65.
6. Hewitson P, Glasziou P, Watson E, Towler B, Irwig L. Cochrane systematic review of colorectal cancer screening using the fecal occult blood test (hemoccult): an update. Am J Gastroenterol. 2008;103:1541–9.
7. Greegor DH. Diagnosis of large bowel cancer in the asymptomatic patient. JAMA. 1967;201:943.
8. Abou-Zeid AA. Colorectal cancer: Ain Shams experience. Panel Discussion, 17th Annual Meeting of the Egyptian Society of Surgeons. Cairo, Egypt, February 1999.
9. Soliman AS, Bondy ML, Levin B, Hamza MR, Ismail K, Ismail S, et al. Colorectal cancer in Egyptian patients less than 40 years of age. Int J Cancer. 1997;71:26–30.