DOI: 10.4274/tjcd.galenos.2020.2019-9-2
Turk J Colorectal Dis 2020;30:42-48

RESEARCH ARTICLE

Our Colonoscopic Screening Results According to Risk Groups in Colorectal Cancers (Pilot Study)

Kolorektal Kanserlerde Risk Gruplarına Göre Kolonoskopik Tarama Sonuçlarımız (Pilot Çalışma)

Ozan Şen[1,2], Ayhan Kuzu[1]

[1]Ankara University Faculty of Medicine, Department of General Surgery, Ankara, Turkey
[2]Nişantaşı University, Department of Health Sciences, İstanbul, Turkey

ABSTRACT

Aim: Most of the colorectal cancers develop on a pre-existing polyp background. With the widespread use of screening tests, mortality of colorectal cancers has been shown to decrease. Our aim in this pilot study is to screen individuals according to risk groups in colorectal cancers and to obtain data that will lead in the establishment of community-based information and screening programs in this direction.

Method: Between October 2004 and February 2008, 358 people underwent colonoscopy for the purpose of screening. Individuals who had a family history of colorectal cancer or polyp, who had a history of colorectal polyps, and who were over the age of 40 years and wanted to voluntarily participate in the screening program although there were no risk factors were classified as average, low, medium and high risk groups. Individuals with a history of colorectal cancer and inflammatory bowel disease were excluded from the study.

Results: As a result of the screening, polyps were detected in 104 (29.1%) people, and masses with malignant appearance in 9 (2.5%) people. Histopathological evaluation revealed adenomatous polyp in 67 (18.7%) individuals, inflammatory polyp in 26 (7.3%) patients, malignant polyp in 11 (3.1%) patients, and invasive cancer in 9 (2.5%) patients (n=358).

Conclusion: Although the results of this pilot study do not reflect the whole society, the frequency of colorectal polyp and cancer is high in our country. In colorectal cancers, it is possible to cure the disease curatively with screening and early diagnosis before the development of cancer. In this regard, the society should be made more conscious and screening programs should be expanded.

Keywords: Colorectal cancers, screening, pilot study, colonoscopy

ÖZ

Amaç: Kolorektal kanserlerin büyük bir kısmı önceden var olan bir polip zemininde gelişir. Tarama testlerinin yaygın kullanımı ile kolorektal kanserlerin mortalitesinde azalma olduğu gösterilmiştir. Bu pilot çalışmada amacımız; kolorektal kanserlerde risk gruplarına göre bireyleri taramak ve bu yönde toplum tabanlı bilgilendirme ve tarama programlarının oluşturulmasında öncülük edecek veriler elde etmektir.

Yöntem: Ekim 2004 ile Şubat 2008 tarihleri arasında 358 kişiye tarama maçlı kolonoskopi yapıldı. Ailesinde kolorektal kanser veya polip hikayesi olan, kendisinde kolorektal polip hikayesi olan bireyler ve hiçbir risk faktörü olmadığı halde gönüllü olarak tarama programına katılmak isteyen 40 yaş üstü bireyler vasat, düşük, orta ve yüksek risk grubuna göre sınıflandırıldı. Daha önceden kolorektal kanser öyküsü, inflamatuvar barsak hastalığı olan bireyler çalışma dışında bırakıldı.

Bulgular: Tarama sonucunda 104 (%29,1) kişide polip, 9 (%2,5) kişide malign görünümlü kitle saptandı. Histopatolojik değerlendirme sonucunda; 67 (%18,7) kişide adenomatöz polip, 26 (%7,3) kişide inflamatuvar polip, 11 (%3,1) kişide malign polip ve 9 (%2,5) kişide invaziv kanser saptandı (n=358).

Sonuç: Bu pilot çalışmanın sonuçları toplumun genelini yansıtmasa da, ülkemizde kolorektal polip ve kanser sıklığı yüksektir. Kolorektal kanserlerde, tarama ve erken tanı ile kanser gelişimi olmadan hastalığı küratif olarak tedavi etmek mümkündür. Bu konuda toplumun daha çok bilinçlendirilmesi ve tarama programlarının yaygınlaştırılması gerekmektedir.

Anahtar Kelimeler: Kolorektal kanserler, tarama, pilot çalışma, kolonoskopi

Address for Correspondence/Yazışma Adresi: Ozan Şen MD,
Ankara University Faculty of Medicine, Department of General Surgery, Ankara, Turkey
E-mail: ozansen77@hotmail.com **ORCID ID:** orcid.org/0000-0002-6987-764X
Received/Geliş Tarihi: 30.12.2019 **Accepted/Kabul Tarihi:** 10.01.2020

©Copyright 2020 by Turkish Society of Colon and Rectal Surgery
Turkish Journal of Colorectal Disease published by Galenos Publishing House.

Introduction

Colorectal cancers are the third most common cancer in the world and ranks 2nd in males and 3rd in females for cancer-related deaths.[1,2] Life in colorectal cancers is closely related to the clinical and pathological stage of the disease at diagnosis. The 5-year survival rate of colorectal cancers varies as 90% in early diagnosed localized disease, 40-60% in regionally spreading disease and 6% in the presence of common metastasis.[2] This shows that if colorectal cancers are noticed and treated early, the death of many patients from this disease can be prevented.

The process of screening covers healthy individuals to undergo a check-up in order to prevent diseases before they develop, to catch them at an early stage and to treat them successfully. With the widespread use of screening tests, mortality of colorectal cancers has been shown to decrease. The majority of colorectal cancers develop on the background of a pre-existing polyp (adenoma). Based on the adenoma-carcinoma model defined by Vogelstein for the first time, clinical studies have shown that the progression from adenoma to invasive cancer covers a period of 8-10 years.[3] In addition, the distribution of adenomas in the colorectum and the distribution of carcinoma have been shown to be parallel in the studies.[4,5] In this long process, with the effective use of screening tests for colorectal cancers in the society, it will be possible to detect risky polyps before they overgrow and become cancer and to treat them at an early stage.

Although programs for screening and early diagnosis have been developed in recent years to inform our society about breast and cervical cancer in women and prostate cancer in men, it is very sad that many patients still die in our country due to colon and rectum cancers, which are completely curative with early diagnosis and treatment.

The frequency of colorectal cancer is extremely low between the ages of 20 and 39 years. It starts to increase significantly between the ages of 40 and 50 years and more than 90% of the cases occur after the age of 50 years.[6] Many studies report that individuals with first-degree relatives who have a history of colorectal cancer also have an increased risk of developing this cancer compared to the normal population.[7,8] Family cases constitute 10-30% of all colorectal cancers. In familial colorectal cancer cases, the risk is related to the age of the incidence of cancer in the family and the number of first degree relatives that are affected.[9] To whom and when colorectal cancer screening tests are performed varies depending on the risk group in which the individuals are included. Many methods are used for screening in colorectal cancers. Colonoscopy is accepted by some authors as the gold standard in colorectal cancer screening programs. The disadvantages of colonoscopy are that it requires complete bowel cleansing and sedation, person who will perform it should be educated and experienced, and it is expensive. However, if it is performed by people with sufficient experience and knowledge, it significantly reduces colorectal cancer mortality due to its high specificity and sensitivity, as it can evaluate the entire colon mucosa, remove the detected lesion, and take histopathological samples.[10,11,12]

Our aim in this study is to screen individuals who are in the risk group for colorectal cancers and to provide early diagnosis and treatment to these individuals. Our aim is to obtain data that will lead the creation of community-based information and screening programs for individuals in the risk group as a result of this pilot study.

Material and Methods

Individuals who had a family history of colorectal cancer or polyp, who had a history of colorectal polyps, and who were over the age of 40 years and wanted to voluntarily participate in the screening program although there were no risk factors were classified as average, low, medium and high risk groups. Individuals with a history of colorectal cancer, hereditary colorectal cancer (HNPCC, FAP), or an inflammatory bowel disease were excluded from the study. The study was started on October 2004 and the study was carried out in the University Hospital General Surgery Department. Ethics committee approval was primarily received for the study. Within the framework of the study, information posters consisting of 4 parts and a brochure with 16 pages were prepared on an introductory basis for individuals (Figure 1, 2, 3, 4.) After obtaining the necessary permissions, the posters prepared were hung in the pre-determined places of the hospital. The relatives of colorectal cancer patients who received inpatient treatment in our hospital were interviewed, and they were given information about the screening program and they were recommended to participate in the screening program. In order to increase the interest in the screening program and to reach more individuals, informative meetings were held every month for primary care physicians in various regions of Ankara since the beginning of 2008. Written informed consents for the study were obtained from all individuals who participated in the study.

The study was done prospectively. Colonoscopy was performed as a screening method in 358 individuals who participated in the study. Colonoscopy was performed by appointment method at the Endoscopy Unit of University Hospital General Surgery Department. All individuals participating in the screening program were interviewed face-to-face and information was given about the procedure, and written informed consents were obtained from all

individuals. Diet, bowel cleansing and how to apply it before the procedure were told to individuals. It was also given to individuals in a written form. Sodium phosphate (fleet) oral suspension was used for colon cleansing.

During the procedure, Fujinon EC-450 WL5 and Olympus GIF-100 endoscope were used. On the day of the procedure, all individuals were monitored and the vascular access was opened and Midazolam (0.03-0.07 mg/kg) + Fentanyl (1-3 micrograms/kg) was administered as iv for premedication. Individuals who were detected to have polyp in colonoscopy underwent polypectomy in the same session or at a later session. No procedure-related complications (bleeding, perforation) developed in any patient. The removed polyps were put into 10% formol and sent to the pathology department. After the procedure, all individuals were kept under surveillance in the recovery room for a certain period of time. In addition, due to the sedation applied, all

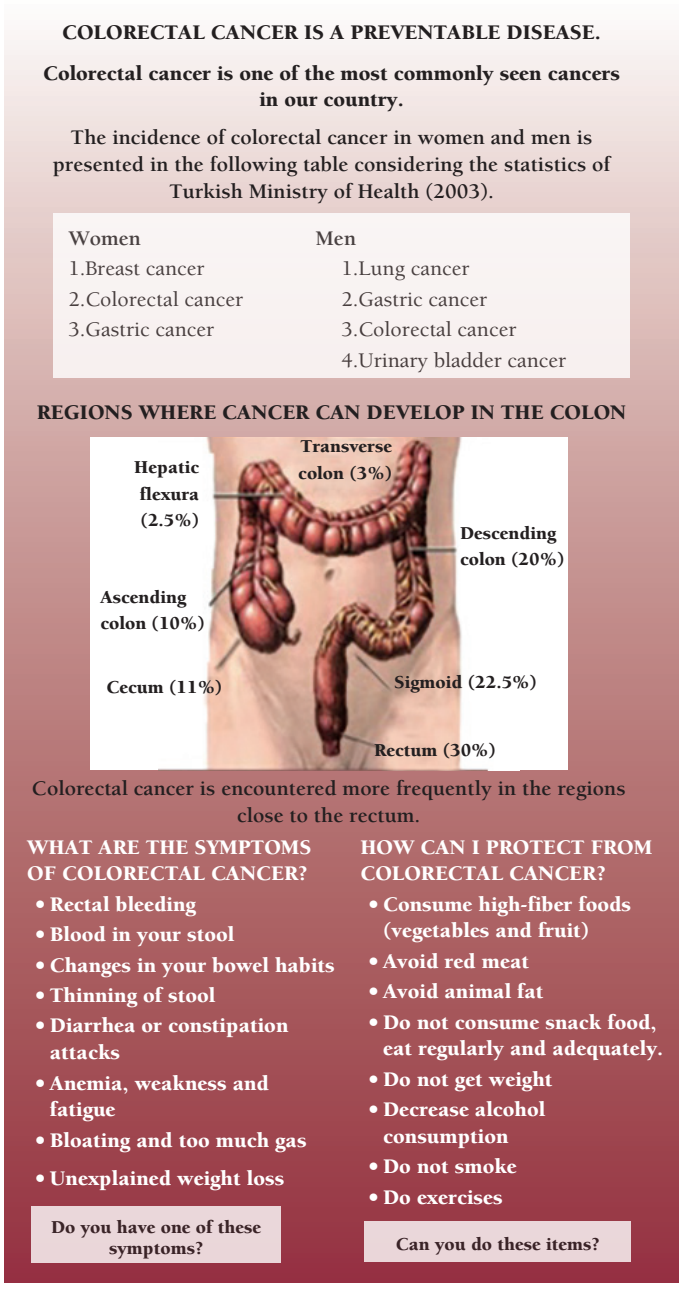


Figure 1. Information poster prepared for individuals emphasizing the importance of screening in colorectal cancers

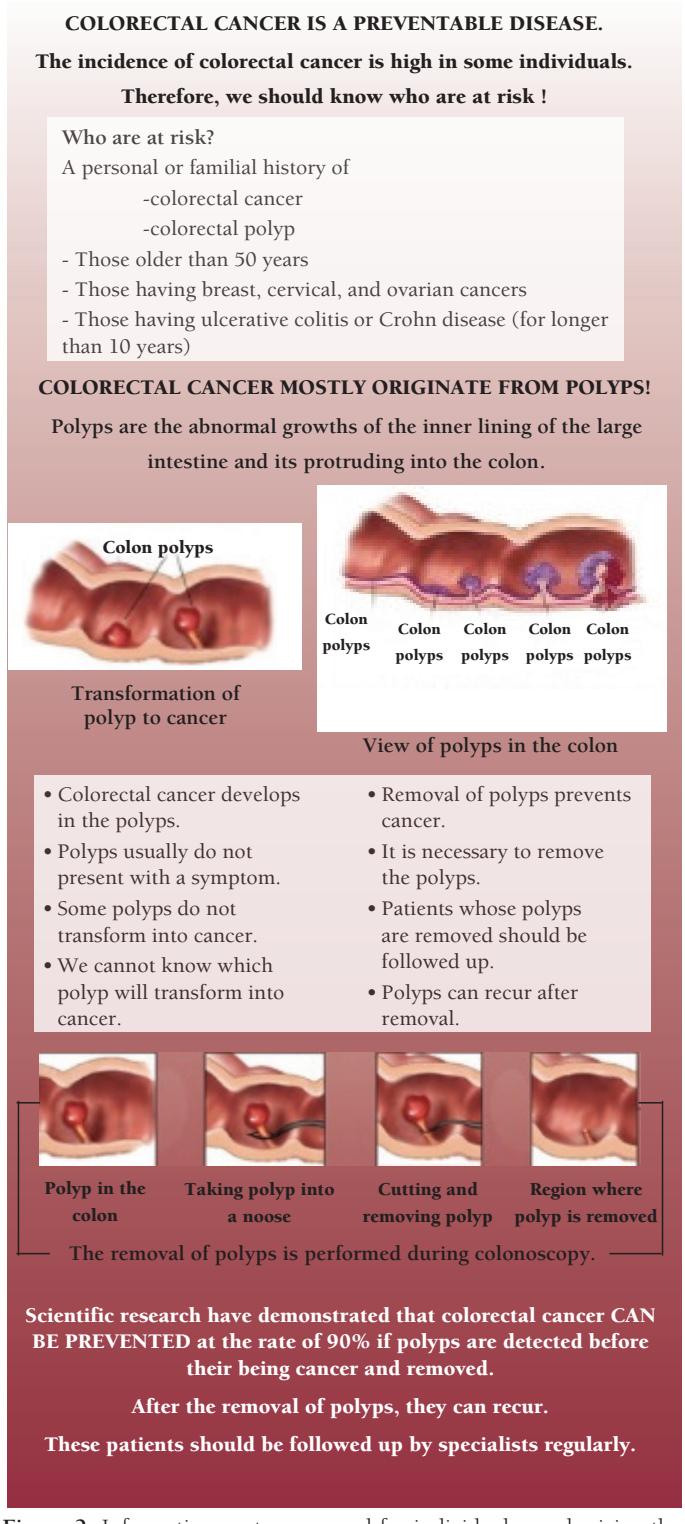


Figure 2. Information poster prepared for individuals emphasizing the importance of screening in colorectal cancers.

individuals were warned (required not to drive for a certain period of time, to avoid works requiring attention) and sent to their homes.

Statistical Analysis

The data of all individuals participating in the study were recorded in the Microsoft Exel program and the statistical analysis of the data obtained was performed using the '11, 5 'version of the software package' SPSS for Windows'.

Results

Between October 2004 and March 2008, 358 people underwent colonoscopy for screening at the Endoscopy Unit of University Hospital General Surgery Department. The mean age of the participants in the screening program was 49.4±10.2 years and 53.4% were women. 288 (80.4%) of these individuals were those aged 40 years and over. When the people participating in the screening were classified according to their risk groups; 86 (24%) people were in the average risk group, 125 (34.9%) were in the low risk group, 125 (34.9%) were in the middle risk group and 22 (6.1%) were in the high risk group.

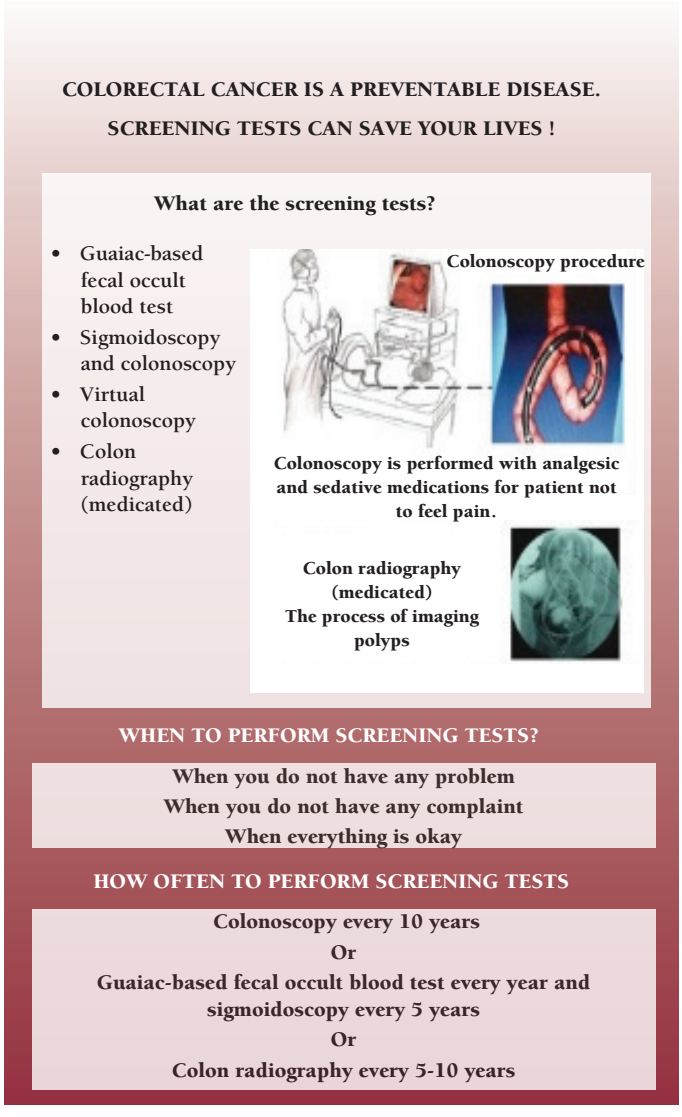


Figure 3. Information poster prepared for individuals emphasizing the importance of screening in colorectal cancers.

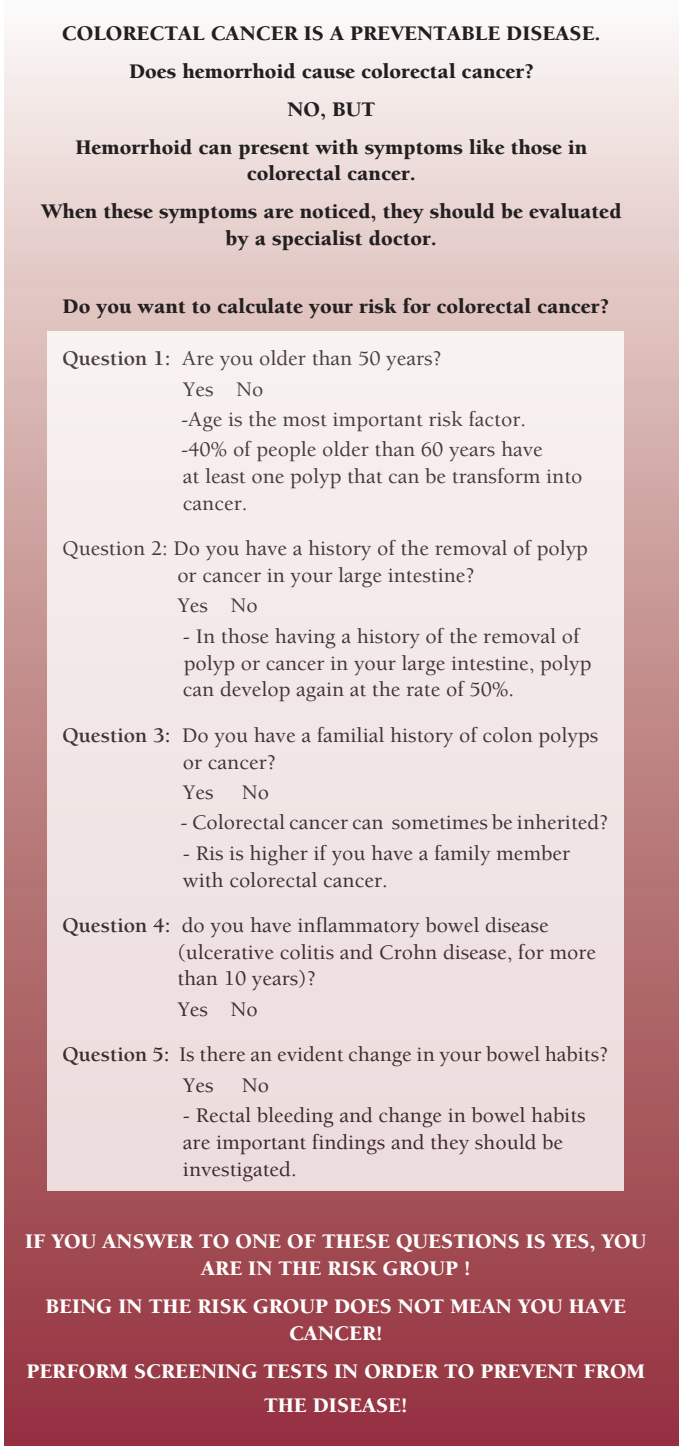


Figure 4. Information poster prepared for individuals emphasizing the importance of screening in colorectal cancers.

At the end of the study, 104 (29.1%) individuals were found to have polyps and 9 (2.5%) people to have a mass suggesting malignancy, and biopsy was performed from them. 96 (26.8%) of 104 (29.1%) people who had polyps in the screening were over 40 years old (60% were male) (Table 1).

The demographic characteristics of the detected polyps were examined and the following results were obtained:

a. Number of Polyps: Single polyp was found in 68 (19%) people, 2-4 polyps in 27 (7.5%) people and more than 4 polyps in 9 (2.6%) people.

b. Polyp Size: The polyp size was below 1 cm in 81 (22.6%) people, 1-2 cm in 13 (3.6%) people and greater than 2 cm in 10 (2.9%) people.

c. Type of Polyp: In people who had polyps, 61 (17.1%) of polyps were sessile and 43 (12%) were pedunculated.

d. Localization of Polyps: Considering the localization of polyps in 104 people with polyps; it was observed that 23 (6.1%) polyp was located in the rectum, 53 (15.2%) were in the left colon, 20 (5.6%) were in the right colon, and 8 (2.2%) were in the transverse colon.

Considering the localization distribution of 9 (2.5%) individuals with a malignant mass as a result of screening; it was observed that 3 lesions were located in the rectum, 5 were in the left colon and 1 was located in the cecum.

When screening results were evaluated according to risk groups, 34 (32.7%) of 104 (29.1%) individuals with polyp were in the average risk group, 34 (32.7%) were in the low risk group, 28 (27%) were in the medium risk group, and 8 (7.6%) were in the high risk group. Of the 9 (2.5%) people who were detected to have a mass as a result of screening, 4 were in the average risk group, 2 were in the low risk group and 3 were in the middle risk group (Table 2).

Histopathological evaluation revealed adenomatous polyp in 67 (18.7%) patients, inflammatory polyp in 26 (7.3%) patients, and malignant polyp in the remaining 11 (3.1%) patients. The pathology results of 9 (2.5%) individuals with a mass appearing as malignant were reported as cancer (Adeno ca). Of the 9 (2.5%) mass lesions that were detected to have cancer as a result of pathology, 8 were located in the left colon and 1 in the right colon. As a result of pathology, 6 of 11 (3.1%) people who were found to have malignant polyps were treated surgically (stalk invasion, lymphovascular invasion) and carcinoma in situ was detected in 5 patients. No additional treatment was given to these people and follow-up was recommended. In addition, 9 (2.5%) people who were found to have cancer as a result of screening were treated surgically (Table 3). As a result of the pathological examination, 4 of these patients were in stage 2 and 5 in stage 3.

Table 1. Screening results in patients undergoing colonoscopy

Screening result	Patients (Total 358)	
	Number	%
No pathology	245	68,4
Polyp (+)	104	29,1
Above the age of 40 years	96	26,8
Below the age of 40 years	8	2,3
Malignant mass	9	2,5

Table 2. Screening results for colorectal cancer according to risk groups

Screening results according to risk groups	No pathology		Polyp		Malignant polyp		Cancer	
	Number	%	Number	%	Number	%	Number	%
- Average risk group **(n=86)**	**48**	55,8	**27**	31,4	**7**	8,1	**4**	4,7
-Low risk group **(n=125)**	**89**	71,2	**30**	24	**4**	3,2	**2**	1,6
-Moderate risk group **(n=125)**	**94**	75,2	**28**	22,4	**0**	0	**3**	2,4
-High risk group **(n=22)**	**14**	63,6	**8**	36,4	**0**	0	**0**	0

Table 3. Histopathological evaluation in patients with malign lesions and treatment modality

Pathology result	Treatment	
	Polypectomy	Surgery
Malign polyp (Carsinoma incitu)	5	-
Malign polyp (İnvazive cancer)	6	6
Mass (invazive cancer)	-	9

Discussion

According to the data of cancer registry center at the Ministry of Health in twelve provinces in 2007-2008, colorectal cancers rank 3rd among women with the rate of 7.8%, and 4th among men with the rate of 7.5%.[2] Around 1 million new cases of colorectal cancer are reported worldwide each year. Life in colorectal cancers is closely related to the clinical and pathological stage of the disease at the time of diagnosis. Epidemiological data show that studies to prevent or reduce the frequency of colorectal cancers should be increased. The incidence of colorectal cancer in the USA decreased significantly between 1992 and 1996 with the widespread use of screening tests and early detection and excision of colon polyps (2.1% /year).[13,14] While early stage cancers constitute 30-40% of colorectal cancer cases in the USA, this rate is unfortunately very low in our country. In a study conducted in our country, between 1985 and 2001, 1771 patients who were operated with a diagnosis of colorectal cancer in a university hospital were retrospectively examined and the results of the study revealed that 82% of patients had advanced tumors.[15] This clearly shows the importance of screening tests.

The majority of colorectal cancers develop on a pre-existing adenomatous polyp background. While the prevalence of adenomatous polyp is about 20-30% before the age of 40 years, it is 40-50% after the age of 60 years.[5,6] Malignant polyps are encountered at the rate of 2-12% in colonoscopic polypectomies and at the rate of 4-9% in colorectal resection series.[16] The risk of carcinoma in a polyp varies between 0.8 and 11%. Contrary to the general belief that the risk of malignancy in polyps smaller than 5 mm is almost nonexistent, 4% risk factors (>25 villous structure and severe dysplasia) for malignancy were detected in polyps smaller than 6mm and it was emphasized to treat all polyps regardless of their diameters in a study.[17]

Today, colonoscopy is accepted as the gold standard in colorectal cancer screening programs by most societies. In the colonoscopic screening study performed on 3196 asymptomatic individuals aged between 50 and 75 years old in America, it was stated that the cecum was reached at the rate of 97% and the procedure-related morbidity was very low (0.3%). In the individuals participating in the study, 38% polyp, 1.6% malignant polyps and 1% invasive cancer were detected, and 48 (2.7%) individuals with no lesions in the distal colon were found to have lesions in the proximal colon. At the end of the study, it was stated that sigmoidoscopy alone might be insufficient in colorectal cancer screening in terms of detecting proximal lesions.[18]

In our study, the rate of polyps in the general population was found to be 29.1%. 26.8% of these individuals were over the age of 40 years and 2.3% were under the age of 40 years. As a result of the study, 3.1% malignant polyp and 2.5% cancer were detected in the entire population.

Colorectal cancers remain an important health problem for our country. Screening of asymptomatic individuals is of great importance since colon and rectum cancers are generally recognized in advanced stages in our country. Considering the durations of surgery, chemotherapy, radiotherapy, and hospital stay, and the periods when they fall behind in their works in patients with colorectal cancer diagnozed at advanced stage, it is inevitable that their medical expenses are much higher than those of the patients catching the disease in the early stages.

Considering all these data, in order to implement screening programs with broad participation, physicians who frequently encounter patients with colorectal cancer should be knowledgeable and sensitive in this regard. In a survey study conducted on 278 physicians to determine the approach of doctors to screening methods used in colorectal cancers, it has been revealed that even specialist physicians working at the branches most commonly encountering individuals having risk for colorectal cancer are negligent for various reasons in having a screening test for themselves or for their parents at risk.[19]

It is clear that this negligent behavior will increase to higher rates considering all physicians and candidates for physicians. It is imperative colorectal cancer screening programs to be implemented and at the same time, physicians and candidate physicians to be enlightened with more updated information. However, the results of this study do not fully reflect the distribution characteristics of colorectal polyp and colorectal cancer and their frequency in Turkish society. In order to obtain more satisfactory results, it will be more appropriate to carry out screening programs on a larger scale and in many centers and to evaluate the all results.

Ethic

Ethics Committee Approval: Ethics committee approval was primarily received for the study.

Informed Consent: The study was done prospectively.

Peer-review: Internally and externally peer reviewed.

Authorship Contributions

Surgical and Medical Practices: A.K., Consept: A.K., Design: A.K., O.Ş., Data Collection or Processing: O.Ş., Analysis or Interpretation: O.Ş., Literature Search: O.Ş., Writing: O.Ş.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.

References

1. Ferlay J, Bray F, Pisoni P, et al. GLOBOCAN 2000: Cancer İncidence, Mortality and Prevalence Worldwide<http://www.dep.iorc.fr/globocan/globocan.htm>
2. Sağlık Bakanlığı Kanserle Savaş Dairesi Başkanlığı 2006-2008 yılları Türkiye Kanser İnsidansı, www.kanser.gov.tr.
3. Borum ML. Colorectal Canser Screening. Prim Care 2001;28:661-674, viii.
4. Vogelstein B, Fearon ER, Hamilton SR, Kern SE, Preisinger AC, Leppert M, Nakamura Y, White R, Smits AM, Bos JL. Genetic alterations during colorectal tumor development. N Eng J Med 1988;319:525-532.
5. SR Hamilton, B Vogelstein, Kudo S, et al. (Eds.), World Health Organization Classification of Tumours, Pathology & Genetics, Tumours of the Digestive System, LARC Pres Lyon 2000 103-147.
6. Markowitz AJ, Winower SJ. Management of colorectal polyps. CA Canser J Clin 1997;47:93-111.
7. Fante R, Benatti P, di Gregorio C, De Pietri S, Pedroni M, Tamassia MG, Percesepe A, Rossi G, Losi L, Roncucci L, Ponz de Leon M. Colorectal carcinoma in different age groups: a population-based investigation. Am J Gastroenterol 1997;92:1505-1509.
8. Lovett E. Family studies in cancer of the colon and rectum. Br J Surg 1976;63:13-18.
9. Rozen P, Ron E. A cost analysis of screening methodology for family members of colorectal cancer patients. Am J Gastroenterol 1989;84:1548-1551.
10. Kodner IJ, Fry RD, Felshman JW, Birnboum Elt, Read TE; İn. Schwarts SI(ed.); Colon, Rectum And Anus; Principles of Surgery; Volume II; Mc Crow- Hill Book Company; New York; 1999; 1265-1382.
11. Winawer S, Fletcher R, Rex D, Bond J, Burt R, Ferrucci J, Ganiats T, Levin T, Woolf S, Johnson D, Kirk L, Litin S, Simmang C; Gastrointestinal Consortium Panel. Gastrointestinal Consortium Panel. Colorektal cancer screening and surveillance: Clinical guidlelines and rotionale - Update based on new exidence. Gastroenterology 2003;124:544-5460.
12. St John DJ. Screening for rectal cancer. Hepatogastroenterology 2000;47:305-309.
13. Hawley ST, Levin B, Vernon SW. Colorectal cancer screening by primary care physicians in two medical care organizations. Cancer Detect Prev 2001;25:309-318.
14. Cancer Facts And Figures 2000; American Cancer Society; 9-11
15. Erkek B, Ozkan N, Bayar S, Genc V, Ekrem U, Kuzu A, Aribal D. Subsite distribution of colorectal carcinoma and implications for screening; a retrospective audit of 1771 cases. Hepatogastroenterology 2007;54:77-80.
16. Markowitz AJ, Winower SJ. Management of colorectal polyps. CA Canser J Clin 1997;47:93-111.
17. Church JM. The Clinical significance of small colorectal polyps. ASCRS Annuel Meeting, June 21-26, New orleans, Program Guide and Abstracts 2003; 167.
18. Lieberman DA, Weiss DG, Bond JH, Ahnen DJ, Garewal H. Veterans Affairs Cooperative Study Group 380. Use of colonoscopy to screen asymptomatic adult for colorectal cancer. N Engl J Med 2000;343:162-168.
19. Altug E, Burhanoglu S, Erkek B, Kuzu A. Kolorektal kanserlerin erken teşhisinde kullanılan tarama testlerine doktorların yaklaşımı. Güncel Gatroenteroloji 2002;6:25-28.