DOI: 10.4274/tjcd.09815
Turk J Colorectal Dis 2016;2:21-26

RESEARCH ARTICLE

Incidence and Characteristics of Colon Polyps in Southeast Anatolian Region: A 5-Year Evaluation

Güneydoğu Anadolu Bölgesinde Kolon Poliplerinin Sıklığı ve Özellikleri: Beş Yıllık Değerlendirme

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ABSTRACT

Aim: Polyps are one of the most common pathologic indications observed in the lower gastrointestinal system. Colonoscopic polypectomy ensures both the treatment of such lesions and identification of their histopathologic features. The purpose of this study was to evaluate the results of polypectomies performed in our clinic.

Method: Colonoscopy reports produced and archived in the Endoscopy Unit of the Faculty of Medicine of Dicle University between January 2010 and December 2014 were retrospectively examined. Demographic, colonoscopic and histopathologic data of 470 patients who underwent polypectomy were recorded.

Results: In five years (between January 2010 and December 2014) a total of 3514 patients underwent colonoscopy and 470 of them were found to have at least one polyp (13.3%). The patients' mean age was 56.9±16.0 years (15-100, range) and 270 of them (61.7%) were male. A total of 980 polypectomies (polyp numbers; median=2, minimum-maximum=1-15) were performed for polyps varying between 2-40 mm in size (mean 6.24±5.0 mm). 31.3% of the patients had polyps in multiple locations, however the most frequent location of the polyps was the rectum (44.9%). The polyps were grouped according to their histopathologic features: adenomatous (53.6%), hyperplastic (31.7%), cancerous (6.6%), dysplastic (5.1%) and others (3%). The histopathologic malignancy risk was found to correlate with having polyps larger than 20 mm in diameter, having pedunculated polyps and having polyps in multiple locations ($p<0.001$, $p<0.001$, and $p=0.011$, respectively). In addition, a correlation was found between the histopathologic dysplasia risk and polyps located on the right side of the colon ($p=0.033$).

Conclusion: Polyp was observed for significant portion of our patient who underwent colonoscopy. The most common of these polyps were the adenomatous type which has the potential of malignancy.

Keywords: Colonoscopy, polypectomy, dysplasia, colon cancer

ÖZ

Amaç: Alt gastrointestinal sistemin en sık saptanan patolojilerinden biri poliplerdir. Kolonoskopik polipektomi, bu lezyonların tedavisinin yanısıra histolopatolojik özelliklerinin ortaya konmasına da imkan sunmaktadır. Bu çalışmanın amacı kliniğimizde uygulanan polipektomi sonuçlarını değerlendirmektir.

Yöntem: Dicle Üniversitesi Tıp Fakültesi Endoskopi Ünitesi'nin arşivi taranarak; Ocak 2010 ile Aralık 2014 tarihleri arasında kolonoskopi raporları retrospektif olarak incelendi. Kolonoskopik polipektomi yapılmış olan 470 hastanın demografik, kolonoskopik ve histopatolojik verileri kaydedildi.

Bulgular: Beş yıllık süre içerisinde (Ocak 2010 ile Aralık 2014 arasında) toplam 3514 hastaya kolonoskopi yapılmış ve 470 hastada polip veya polipler saptanmıştır (%13,3). Hastaların yaş ortalaması 56,9±16,0 yıl (15-100) ve 270'i (%61,7) erkekti. Polip boyutları 2-40 mm arasında (ortalama 6,24±5,0 mm) olan 980 polipektomi (polip sayısı; ortanca=2, minimum-maksimum=1-15) işlemi yapılmıştı. Hastaların %31,3'ünde birden fazla lokalizasyonda polip saptandı ve en sık yerleşim yeri rektumdu (%44,9). Histopatolojik olarak polipler adenomatöz (%53,6), hiperplastik (%31,7), kanser (%6,6), displazik (%5,1) ve diğer patolojiler (%3) olarak tanımlanmıştı. Histopatolojik olarak malignite riski ile 20 mm'den büyük çaplı polip, saplı polip ve birden fazla lokalizasyonda polip bulunması arasında korelasyon saptandı (sırasıyla $p<0,001$, $p<0,001$ ve $p=0,011$). Histopatolojik olarak displazi riski ile poliplerin sağ kolon yerleşimi arasında da korelasyon saptandı ($p=0,033$).

Sonuç: Kolonoskopi yapılan hastalarımızın önemli bir kısmında polip saptanmıştır. Bu polipler arasında en sık rastlanan grup malignite potansiyeline sahip olan adenomatöz poliplerdir.

Anahtar Kelimeler: Kolonoskopi, polipektomi, displazi, kolon kanser

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Received/Geliş Tarihi: 05.01.2016 **Accepted/Kabul Tarihi:** 22.03.2016

Introduction

Colorectal cancers (CRC) have an important place among the cancers that affect both genders. CRCs ranked in the third order among the cancers and cancer mortalities in both of the genders in United States.[1] Annual estimated numbers of new CRC cases and deaths caused by CRC were reported as 136.830 and 50.310 respectively in United States.1 According to the data of Ministry of Health, CRC incidence is ranked in the third order in females (7.8%) and in the fourth order in males (7.5%) among all cancers.[2]

Most of the CRCs are originated from adenomateous polyps that have malign potential in colon.[3] Colonoscopy is widely used both for diagnosis of CRC and detection and resection of polyps. Colonoscopy is suggested as the primary CRC screen method from the age of 50.[4] Colonoscopic polypectomy was shown to reduce both the incidence of CRC and CRC related mortality.[5,6]

Colonoscopy is a safe and cost effective procedure and it is becoming a widely used method in our country like all over the world. Large scaled polyp evaluation studies were reported from East Anatolia, Aegean and Marmara regions.[7,8,9] There is no study revealed the polyp characteristics in detail in Southeast region. Our hospital provides healthcare service to a substantial population in Southeast Anatolian region. In this study we aimed to reveal the incidence and characteristics of polyps in our region by evaluating the colonoscopic polypectomy results.

Materials and Methods

This study is conducted by retrospective screening of colonoscopic polypectomy procedures that has been performed between January 2010-December 2014 in Dicle University Medical Faculty Endoscopy Unit. The study was approved by Ethical Committee of Dicle University Medical Faculty.

All patients were pretreated with 500 mg sennoside A+B calcium (XM Oral solution, Yenişehir Lab) with night hunger, one night before the procedure subsequent to 3 days juicy diet and sodium dihydrogenphosphate-disodium hydrogenphosphate (BT Enema, Yenişehir Lab) was applied one hour before in order to provide proper colon hygiene. Parenteral midazolam (Dormicum, Roche) and pethidine HCl (Aldolan, Roche) were administered for premedication. Olympus CF-Q260AL flexible videocolonoscopy equipment (Olympus Optical Co., Tokyo Japan) was used for colonoscopy procedure. Detailed information was given to patients before the procedure and informed consent was taken. Samples of polypectomy material were fixed for 24 hours in formaldehyde solution and subsequent to routine pathological tissue follow-up, paraffin blocks were prepared and 4 µm sections were made by standard microtome. Sections were dyed with Hemotoxilen-Eosine and examined under light microscope (Nikon ECLIPSE 80i) with x200 magnification. Patients with prominent obstructive lesions, polyps with ulcerative lesions, polyp number more than 15, undergone surgery for colon tumors were excluded from the study. Number of polyp states the number of polypectomy performed with colonoscopy and all of the polyps were removed during the same procedure. The size and appareance of polyps were described according to the biggest polyp that diagnosed histopathologically. The demographic characteristics, findings of colonoscopy and histopathological diagnoses of eligible patients were recorded.

Statistical Analysis

Statistical analysis were performed by using SPSS 15.0 for Windows (SPSS Inc., Chicago, IL, USA) packaged software. Normal distribution of data was evaluated by using Kolmogorov Smirnov test. If descriptive statistics regarding continuous variables show normal distribution they were expressed as mean and standard deviation (SD), if they don't show normal distribution they were expressed as median and range values. Yates correction and Pearson chi-square test were used for the analysis of cross tables. Student's t test was used for the comparison of two group mean values. Hypotheses were two-way hypotheses and $p<0.05$ was accepted as statistically significant.

Results

Demographic Characteristics

Among 3514 colonoscopy patients, total of 470 patients (13.3%) with polypectomy performed over 5 years time in our endoscopy unit were recruited to study. The mean age (± SD) of patients was 56.9±16.0 (between 15-100 years). Two hundred ninety (61.7%) of patients were male and 66.4% (312) were found over 50 years old. In adenomatous polyp group, the ratio of patients over 50 years of age was 71.8% (n=181) and the ratio of male patients was 63.9% (n=161).

Colonoscopic Data

Polyps localised mostly (53.2%) in rectum and least (14.9%) in ascending colon-caecum. 68.7% of patients (323) have single localised polyps and the ratio of patients with multiple localisation was 31.3%. 36.1% of polyps were localised in rectum, 41.8% in left colon and 22.1% in right colon. Total of 980 (1-15 polyps per patient, median: 2) polyps were detected. Sizes of polyps were between 2-40 mm and almost 79.8% of the polyps were smaller than 10 mm (median: 5 mm). 70.2% of the polyps were sessile and 29.8% were stalked polyp as morphological appearance. This data was described in detail in Table 1.

Histopathological Data

Polyps were classified histopathologically as following; 53.6% adenomatous, 31.7% hyperplastic, 6.6% cancer, 5.1% dysplasia and 3.0% others (according to frequency order; serrated adenoma, juvenile, inflammatory, hamartomatosis, lipoma and lymphoma) (Figure 1). Adenomatous polyps were reported as tubular (85.3%), tubulovillous (12.7%), and villous type (2%) according to subtypes. Twenty four of adenomateous polyps have dysplasia and three of them were high grade.

There was no correlation determined between age, gender and malignity or dysplasia in statistical evaluation. The ratio of patients over 50 years of age was 71.8% (n=181) among the patients with adenomateous polyp and statistically significant correlation was found (r=0.124 and p=0.007). A statistically significant correlation was determined between the malignity risk and polyps larger than 20 mm (r=0.452 and p<0.001), stalked polyp (r=0.32 and p<0.001) and presence of polyps in more than one localisation (r=0.117 and p=0.011). A statistically significant but weak correlation was determined between the risk of dysplasia and polyps localised in right colon (r=0.019, p=0.033). The relation between the size of the polyp, polyp appearance with malignity and dysplasia was shown in Table 2 and 3.

Table 1. Demographic, colonoscopic and hystopathologic characteristics of patients

	n, (%)
Number of patients	470
Male	290 (61.7)
Female	180 (29.3)
Age, mean ± standard deviation	56.9±16.0
Localisation*	
Rectum	250
Sigmoid colon	190
Decending colon	100
Transvers kolon	83
Ascending colon- caecum	70
Multiple localisation	147 (31.3)
Adenomatous polyp	252 (53.6)
Tubuler	215
Tubulovillous	32
Villous	5
Dysplasia	24 (5.1)
Low grade	21
High grade	3
Cancer	31 (6.6)

*Polyp was observed in more than one localisation in some of the patients

Discussion

Colon polyps are generally classified as non-neoplastic, hamartomatosis, neoplastic, serrated adenomas and submucosal. Recently, in addition to adenomatous polyps which are the cause of 70-80% of CRC development, also serrated adenomas are considered to have malignant potential.[10,11,12,13,14] This process from polyp to cancer, almost takes 10-15 years for most of the adenomatous

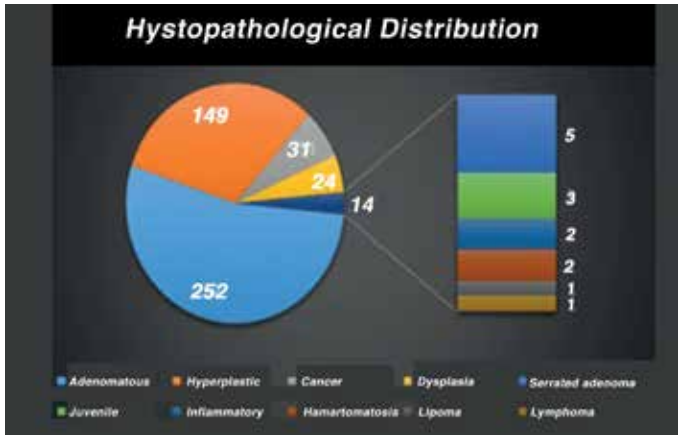


Figure 1. Numerical distribution of patients according to their hystopathological diagnosis

Table 2. Relation between polyp appereance with dysplasia and malignity

Polyp appereance	Number of patients n	Dysplasia n, (%)	Cancer n, (%)
Non-stalked	330	13 (6.9)	2 (0.8)
Stalked	140	11 (7.9)	29 (20.7)*
Total	470	24 (5.1)	31 (6.6)

*p<0.001

Table 3. Relation between polyp size with dysplasia and malignity

Polyp size	Number of patients n	Dysplasia n, (%)	Cancer n, (%)
0-9 mm	375	14 (3.2)	6 (1.6)
10-19 mm	72	9 (12.5)	14 (19.4)
>20 mm	23	1 (4.3)	11 (47.8)*
Total	470	24	31

*p<0.001

polyps.[15,16] This is an important period for the prevention of CRC for clinicians. The National Polyp Study data reported that the resection of adenomatous polyps by endoscopy is related with 76-90% reduction in CRC incidence.[5] Also the follow up data over 23 years from the National Polyp Study reported that there was 53% reduction in deaths caused by colon cancer in patients with adenomectomy.[6] Compared to other strategies, colonoscopy is advantageous as it is a single stage procedure that allows to detect early cancer and to resect the precursor lesion during the same process.[17]

Advanced age, is an important risk factor for occurrence of adenomatous polyp in colon. While the polyp incidence was 1-4% in second and third decades, it increases up to high ratios like 50% in 70 years age.[18,19] Most of our polyp patients were over 50 years old in concordance with the literature.

It is reported that most of the polyps are smaller than 5 mm size and localised in distal colon.[20,21] A study performed by Atamanalp et al.[7] reported that the ratio of polyps smaller than 5 mm diameter was 63.4% and the ratio of localisation in rectosigmoid region was 81.1%. In the study conducted by Oymacı et al.[8] İzmir, these ratios are reported as 58.4% and 57% respectively. In study of Eminler et al.[9] polyps smaller than 5 mm diameter were not specified but the ratio of polyps smaller than 10 mm diameter was 69.5% and the ratio of localisation in rectosigmoid region was 47%. In our study the ratio of polyps smaller than 5 mm diameter was 61.9% and the ratio of the localisation in rectosigmoid region was 63.4%. These data was in concordant with literature but the ratio of the localisation in rectosigmoidal region was slightly higher in Atamanalp et al.'s[7] study. This can be caused from the concomitant evaluation of sigmoidoscopy and colonoscopic polypectomy procedures. The detection ratio of synchronized polyp by colonoscopy was between 30-50%.[22] In a large scaled study from our country which handled the evaluation over 20 years, this ratio was reported as 25.9%.[8] In our study this ratio was determined as 31.3% and overlapped both with international and national data.

Though most of the polyps are smaller than 1 cm it is known that there is a relation between the size increment of polyp and cancer. The size being more than 1 cm is a risk factor for the occurrence of CRC in adenomateous polyps. Even if polypectomy was performed, the risk of metachronous adenoma was reported as 20% in polyps bigger than 2 cm size.[23] In a study, while the cancer incidence was observed as 0.45% in patients with polyps smaller than 5 mm size, the incidence increased with polyp size and achieved 70.8% in polyps between 21-30 mm and 90.5% in patients with polyps bigger than 30 mm.[24] In our study, the most statistically significant correlation was found between the polyps bigger than 20 mm and cancer.

Hyperplastic polyps are the most frequently seen polyps together with adenomateous polyps in colonoscopy. In our study, adenomateous (majority are tubular and tubulovillous) adenomas were the most frequently seen adenomas and hyperplastic polyps were ranked in the second order. Hyperplastic polyps are generally localised in rectosigmoid region and most of them are smaller than 10 mm. Previously, the patients with these polyps had considered to have normal colonoscopy and had been suggested to perform control colonoscopy every 10 years.[25] But recently, one of the important progresses is the approach to serrated polyps. It had been considered that hyperplastic polyps had no malign potential, but in 2010 World Health Organization classified hyperplastic polyps in serrated lesions together with sessile serrated adenoma/polyp with malign potential and conventional serrated adenoma.[26] Almost 1/4 of colon cancers are considered to occur by the molecular pathways that is characterized with hypermetilation of genes.[12] It is thought that probably sessile serrated polyps are the precursor lesions of hypermetilation disorder. Sometimes these polyps involve dysplasia. In light of this information, American Gastroenterological Association (AGA) Guideline 2012 published the follow-up suggestion for the first time for sessile serrated and conventional serrated adenomas every 3 years like high risk adenomas.[27] In our clinic the colonoscopic follow up suggestions for both hyperplastic and adenomateous polyps subsequent to polypectomy, performed at inverals that were defined in AGA guidelines.[25,27] In our study there was no reported dysplasia or cancer from total of 154 patients (149 hyperplastic polyp, 5 serrated adenomas). As inter and intraobserver diagnostic variations among the pathologs are observed in a high rate, there is a need of close relation between endoscopists and pathologists in order to overcome the diagnostic difficulties particularly for proximal localised polyps.[28,29]

While the ratio of cancer detection was reported as 0.5-2.1% at colonoscopy screenings for the risk groups, the ratio increased to 4% at polypectomy series.[24,30] This ratio was reported as 0.8%, 2.8% and 3.8% respectively in three polypectomy series published in Bursa, İzmir and Erzurum.[7,8,9] Our ratio was higher (6.5%) than literature. Patients who couldn't undergone polypectomy (particularly patients with large size polyps) because of technical shortcomes in other hospitals were referred to our hospital and this could effect our ratio. Given that, even in western countries the ratio of screening colonoscopy constitutes 1/4 of all colonoscopies, performing colonoscopy to symptomatic patients can be considered as another factor that effect this ratio.[31]

As mentioned before colonoscopy provides a significant reduction in CRC incidence and mortality. But, it is seen that, this superiority in cancer prevention was lower in right colon relatively to left colon.[32] Inadequency of cleaning performed for colonoscopy in this region, anatomic structure that effects the visibility and fail to reach to caecum during colonoscopy are considered as the reasons of this. Moreover, early detection becomes even more important as adenomas in the right colon are short-stalked and mostly plain-flat and also have various histology and biological specialities that involves the dominant genetic pathways of carcinogenesis.[33,34] Though involvement of right colon was significantly lower in regard of polyp localisation in our study, there was a statistically significant correlation between the polyps at this region and dysplasia. Quality improvement in right colon assessment in colonoscopy procedure can provide positive contribution on this problem.

Our study has limitations as it was a single centered and retrospective study. We couldn't found the number of symptomatic patients and rate of diagnostic/screening actions because we couldn't determine the colonoscopy indication in all of the cases. Moreover, we couldn't determine the complication rates as we couldn't achieve the all follow up data.

Conclusion

In conclusion, this study revealed the detailed polypectomy results of our hospital that provides tertiary healthcare service in Southeast Anatolia region. Polyp was detected colonoscopically in a substantial part of the patients that were reffered to our clinic. The most frequent type of these polyps were adenomateous polyps with malign potential. There is a need of multicentered prospective studies to evaluate the effects of polyp incidence, relation of dysplasia and cancer and effects of polypectomy on CRC by considering the socio-cultural diversities in our country.

Ethics

Ethics Committee Approval: The study was approved by the Dicle University Faculty of Medicine Ethics Committee, Informed Consent: Detailed information was given to patients before the procedure and informed consent was taken.

Peer-review: Internal peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: Feyzullah Uçmak, Elif Tuğba Tuncer, Nazım Ekin, Hüseyin Büyükbayram, Muhsin Kaya, Concept: Feyzullah Uçmak, Elif Tuğba Tuncer, Nazım Ekin, Hüseyin Büyükbayram, Muhsin Kaya, Design: Feyzullah Uçmak, Muhsin Kaya, Data Collection or Processing: Feyzullah Uçmak, Elif Tuğba Tuncer, Nazım Ekin, Hüseyin Büyükbayram, Analysis or Interpretation: Feyzullah Uçmak, Muhsin Kaya, Literature Search: Feyzullah Uçmak, Elif Tuğba Tuncer, Writing: Feyzullah Uçmak, Nazım Ekin, Muhsin Kaya.

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

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

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