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Original Article / *Özgün Makale*

Is colon-cleansing related to educational level?

Kolon temizliği eğitim düzeyi ile ilişkili mi?

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ABSTRACT

Objectives: This study aims to investigate if education level has any effect on bowel cleansing.

Materials and methods: We retrospectively evaluated 100 patients (54 males, 46 females; mean age 55±14 years; range, 19 to 83 years) who underwent colonoscopy for any reason in the Endoscopy Unit of Gastroenterology Department of Izmir Tepecik Education and Research Hospital between 01 August 2015 and 30 November 2015. Data were obtained from the computerized system of the hospital. We grouped patients according to age, gender, educational status, being inpatient or outpatient, colon-cleansing and if cecum was accessed or not.

Results: Twenty-nine patients were unschooled and 19 patients were illiterate. Ten of the 19 patients in whom cecal intubation was not achieved were unschooled. Cecal intubation rate (CIR) in outpatients was higher than inpatients (84% vs. 54% and p=0.002). Cecal intubation rate was lower in the illiterate patients than the literate patients (57% vs. 86% and p=0.008). Cecal intubation rate was lower in the unschooled patients than the schooled patients (65% vs. 87% and p=0.01). Cecum was accessed in all patients who were university graduates. Inadequate bowel cleansing rate was lower in the illiterate patients than the literate patients (21% vs. 42% and p=0.05).

Conclusion: All colonic mucosa should be carefully examined for an effective colonoscopy. Bowel cleansing, including preliminary procedure preparations, should be handled with care. It may be beneficial to emphasize the importance of preparations using educational videos and raise awareness in this regard. Colonoscopy results may be unsatisfactory if the training and comfort of patients are inadequate.

Keywords: Bowel cleansing; cecal intubation rate; colonoscopy education.

ÖZ

Amaç: Bu çalışmada eğitim düzeyinin bağırsak temizliği üzerinde etkisi olup olmadığı araştırıldı.

Gereç ve yöntemler: İzmir Tepecik Eğitim ve Araştırma Hastanesi Gastroenteroloji Bölümü Endoskopi Biriminde 01 Ağustos 2015-30 Kasım 2015 tarihleri arasında herhangi bir nedenle kolonoskopi uygulanan 100 hasta (54 erkek, 46 kadın; ort. yaş 55±14 yıl; dağılım, 19-83 yıl) retrospektif olarak değerlendirildi. Veriler hastanenin bilgisayarlı sisteminden edinildi. Hastalar yaş, cinsiyet, eğitim durumu, ayakta veya yatan hasta olmaları, kolon temizliği ve çekuma erişilip erişilememesine göre gruplandı.

Bulgular: Yirmi dokuz hasta eğitimsizdi ve 19 hasta okuryazar değildi. Çekal entübasyonun yapılamadığı 19 hastanın 10'u eğitimsizdi. Ayakta hastaların çekal entübasyon oranı (ÇEO) yatan hastalardan daha yüksekti (%84'e karşın %54 ve p=0.002). Çekal entübasyon oranı okuryazar olmayan hastalarda okuryazar hastalardan daha düşüktü (%57'ye karşın %86 ve p=0.008). Çekal entübasyon oranı eğitimsiz hastalarda eğitimli hastalardan daha düşüktü (%65'e karşın %87 ve p=0.01). Üniversite mezunu tüm hastalarda çekuma erişildi. Yetersiz bağırsak temizliği oranı okuryazar olmayan hastalarda okuryazar hastalardan daha düşüktü (%21'e karşın %42 ve p=0.05).

Sonuç: Etkili bir kolonoskopi için kolonik mukozanın tamamı dikkatle incelenmelidir. Barsak temizliği dahil işlemin ön hazırlıkları özenle yerine getirilmelidir. Eğitsel videolar kullanılarak hazırlıkların önemini vurgulamak ve bu konuda farkındalığı artırmak faydalı olabilir. Hastaların eğitimi ve rahatı yetersiz olursa kolonoskopi sonuçları tatmin edici olmayabilir.

Anahtar sözcükler: Bağırsak temizliği; çekal entübasyon oranı; kolonoskopi; eğitim.

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Colonoscopy is an important procedure that provides information to gastroenterologists about colon mucosa. Inspection of the entire colonic mucosa is essential for the best results in colonoscopy. Screening the entire mucosa is very important especially in the case of colonic adenocarcinoma which can be prevented if detected early. Adequate bowel preparation improves outcomes. Insufficient clearance of the colon reduces the doctor's confidence in the patient, while delaying diagnosis, lowering rates of detection of adenoma, assessing the progress of existing pre-cancerous lesions, repeating the procedure which is quite disturbing for patients, increasing medical costs. The procedure should be completed meticulously from the preparation period to the end. The application of the endoscopist, the patient's adaptation, the pre-procedural diet, the type of medication, and whether or not sedation is given can affect the quality of the results. Education is another factor that may affect the quality of colonoscopy. Patient perception, compliance with rules and recommendations, and proper use of drugs and diet should be considered within this context. In this study, we aimed to reveal the effect of education level on bowel cleansing.

MATERIALS AND METHODS

We evaluated 100 patients (54 males, 46 females; mean age 55±14 years; range, 19 to 83 years) who underwent a colonoscopy at the Endoscopy Unit of Gastroenterology Department of İzmir Tepecik Education and Research Hospital between 1st August and 30th November 2015, retrospectively. Colonoscopy data was available in the computerized medical system of the hospital. All of the patients used the same preparation method. They were informed about the colonoscopy procedure and what they should do before the colonoscopy appointment with a written paper. Soft diet was advised for the last two days before the procedure. Patients received 250 mL of sodium sennoside solution the day before colonoscopy. Colonoscopy was performed by injecting an enema (210 mL) containing sodium dihydrogen phosphate through the rectum in the morning. All of the procedures were performed without anesthesia by different endoscopists. The incomplete examinations were due to complaints of inadequate bowel cleansing and patients' pain. None of the examinations were ended because of complications.

We grouped the patients according to age, gender and education level. Our endpoints were cecal intubation and bowel cleansing rates. According to age, patients who are older than 65 years were called 'elderly' and who are younger than 65 years were called 'adult'. Patients were grouped as unschooled or schooled. The schooled group was further separated as graduated from primary school, high school and university according to their educational diversity. The unschooled group contained those who don't know how to read and write (called as 'illiterate') or learned with courses, not in a school.

Bowel cleansing was classified according to Quality Assurance Guidelines For Colonoscopy (2011) as excellent, adequate or inadequate.

Excellent: minimal solid stool that is cleared with suction or no stools.

Adequate: semi-solid stool that is cleared with suction/washing.

Inadequate: solid or semi-solid stool that is not able to be cleared.

We grouped examinations as complete if the scope could reach the ileocecal valve and incomplete if not. Cecal intubation was defined as reaching to the ileocecal valv or terminal ileum, so visualizing the entire colonic mucosa. Access to cecal intubation was documented with photographic evidence of appendiceal orifice, ileocecal valve or terminal ileum in all procedures.

Statistical analysis

We used the statistical program IBM SPSS version 20.0 (IBM Corp., Armonk, NY, USA) and Pearson Chi-Square tests for the analyses.

RESULTS

Twenty nine of the patients were unschooled and 19 of 29 patients were illiterate. Ten of the 19 patients with whom cecal intubation was not accessed, were unschooled (Table 1).

Cecal intubation rate (CIR) was 75/89 (84%) in outpatients as it was 6/11 (54%) in hospitalized patients (inpatients). This difference was statistically significant (p=0.02). CIR in

Table 1. Patients grouped in according to their educational diversity

Educational level	Patients	*Total*
Unschooled		
Illiterate	19	
Can read & write	10	29
Schooled		
Primary school	56	
High school	10	71
University	5	
Total	100	100

Table 2. Cecum accession according to being inpatients or outpatients

	Cecum accessed	Cecum not accessed	*Total*
Outpatient	75	14	89
Inpatient	6	5	11
Total	81	19	100

Table 3. Cecum accession according to being literated or illiterated

	Cecum accessed	Cecum not accessed	*Total*
Illiterated	11	8	19
Literated	70	11	81
Total	81	19	100

outpatients were higher than hospitalized patients (84% vs. 54%) (Table 2). CIR was 11/19 (57%) in the illiterate group but 70/81 (86%) in the literated group. This difference was statistically significant (p=0.008) (Table 3). CIR was 19/29 (65%) in the unschooled group but 62/71 (87%) in the schooled group. This difference was statistically significant (p=0.01). In all the patients who had graduated from university, the cecum was accessed (100%).

Inadequate bowel cleansing rate was 8/19 (42%) in illiterate group and but it was 17/81 (21%) in literate group. This difference was statistically significant (p=0.05). Being in the older or adult group had no effect on colonoscopy clearance and CIR. the results did not change by gender.

DISCUSSION

Colonoscopy is essential for diagnosis, treatment and follow-up of colon diseases. A colonoscopy which is done with optimal efficacy enables the examination of the entire colonic mucosa up until the terminal ileum. Colonoscopy should provide an optimal assessment of the entire colon mucosa up to the terminal ileum. A meticulously completed procedure allows the examiner to make a diagnosis. Inadequate bowel preparation postpones the diagnose or the treatment, fails to reach the caecum, prolongs withdrawal time, increases costs, causes repetitions of this invasive procedure and also causes patients discomfort. Inadequate intestinal preparation reduces the confidence of the patient to the doctor, while delaying diagnosis, lowering the rates of detection of adenoma, progressing the existing pre-cancerous lesion, repeating the procedure which is quite disturbing to the patients, increasing medical costs. On the other hand, inadequate bowel preparation may also impair the patient-doctor relationship.

According to guidelines, sufficient intestinal preparation allows the detection of polyps greater than 5 mm.[1] If the preparation is insufficient, repetition of the procedure is recommended within one year or in a shorter time, if needed.[1] Although colonoscopy is the best tool for colorectal cancer screening, recent data (from 1990s and so far) suggests that colorectal cancer rates are declining in whites and blacks in the United States and we can say that effective use of colonoscopy would make this possible.[2] This is a very important point as it reduces cancer-related deaths. We emphasize the problems in the path to optimal colonoscopy. American College of Gastroenterology (ACG)/ American Society for Gastrointestinal Endoscopy (ASGE) assignments recommend CIR ≥90% for all examinations with a level of evidence 1C.[3] Our CIR was 81%. We believe that this lower rate can be explained by low educational levels, and lack of sedation use. Inadequate colon cleansing declines the quality of the examination. In a study of 90,000 colonoscopies, only three quarters of patients had adequate levels of bowel preparation, however the importance of sedation or educational level was not emphasized in that study.[4] Some other studies show similar results as 79% and 78%.[5,6] In our study, the adequate ('adequate' and 'excellent') bowel preparation rate was 74%, compatible with other studies. But Quality Assurance Guidelines for Colonoscopy (2011) recommends ≥%90 as excellent or adequate. This study shows that colonoscopy clearance and CIR are associated with educational status.

Conscious sedation ameliorates the examination related problems. It minimizes technical difficulties, improves patient comfort and enhances the quality of the process. In a study conducted in Austria, data from 52,506 colonoscopies showed better CIR in sedation (increased from 92.0 to 94.9% in women and from 95.5 to 96.8% in men).[7] In the same study, adenoma detection rates were used as another quality indicator for colonoscopy showed no increase. Sedation reduces worry and fear of having to have a colonoscopy again and increases both patient satisfaction and acceptability of future procedures.[8] This also improves patient's compliance for the procedure. It is shown that the quality of the colonoscopy was influenced by patient-related, endoscopic, and central features.[9]

In this study, it can be argued that poor outcomes are associated with a low level of education, at which point the level of low education is a correctable factor in those with inadequate bowel preparation. Our study has some limitations. First, colonoscopies were completed by different endoscopists. Second, lack of sedation causes discomfort during the procedure and some of the examinations were terminated by the patient's request. This lowered the CIR. Thirdly, lower educational level represents low patient-compliance. This also lowered the CIR and the adequate bowel cleansing. So far the data is lacking in the literature about this topic, as a result we could not compare with other studies.

Conclusion

How can an endoscopist enhance the quality of colonoscopies? First of all, definite compliance for the procedure is essential. The ease and comfort of the patient can be provided through sedation, but it can slow down the work in this section and this can be particularly difficult for intensive study departments. On the other hand, it can be beneficial to emphasize the importance of preparations using educational videos and raise awareness in this regard. It is clear that written documents are not always read. Within the limits of this study, if the training and comfort of the patients were poor, the results of the colonoscopy were poor.

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REFERENCES

1. Johnson DA, Barkun AN, Cohen LB, Dominitz JA, Kaltenbach T, Martel M, et al. Optimizing adequacy of bowel cleansing for colonoscopy: recommendations from the US multi-society task force on colorectal cancer. Gastroenterology 2014;147:903-24.
2. DeSantis CE, Siegel RL, Sauer AG, Miller KD, Fedewa SA, Alcaraz KI, et al. Cancer statistics for African Americans, 2016: Progress and opportunities in reducing racial disparities. CA Cancer J Clin 2016;66:290-308.
3. Rizk MK, Sawhney MS, Cohen J, Pike IM, Adler DG, Dominitz JA, et al. Quality indicators common to all GI endoscopic procedures. Gastrointest Endosc 2015;81:3-16.
4. Harewood GC, Sharma VK, de Garmo P. Impact of colonoscopy preparation quality on detection of suspected colonic neoplasia. Gastrointest Endosc 2003;58:76-9.
5. Cohen SM, Wexner SD, Binderow SR, Nogueras JJ, Daniel N, Ehrenpreis ED, et al. Prospective, randomized, endoscopic-blinded trial comparing precolonoscopy bowel cleansing methods. Dis Colon Rectum 1994;37:689-96.
6. Ness RM, Manam R, Hoen H, Chalasani N. Predictors of inadequate bowel preparation for colonoscopy. Am J Gastroenterol 2001;96:1797-802.
7. Bannert C, Reinhart K, Dunkler D, Trauner M, Renner F, Knoflach P, et al. Sedation in screening colonoscopy: impact on quality indicators and complications. Am J Gastroenterol 2012;107:1837-48.
8. Baudet JS, Aguirre-Jaime A. The sedation increases the acceptance of repeat colonoscopies. Eur J Gastroenterol Hepatol 2012;24:775-80.
9. Zorzi M, Senore C, Da Re F, Barca A, Bonelli LA, Cannizzaro R, et al. Quality of colonoscopy in an organised colorectal cancer screening programme with immunochemical faecal occult blood test: the EQuIPE study (Evaluating Quality Indicators of the Performance of Endoscopy). Gut 2015;64:1389-96.