

Relevance of colonoscopy indication according to EPAGE II criteria

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Abstract

In recent years, the indications for diagnostic colonoscopy have gradually increased [1], sometimes lengthening appointment times and sometimes delaying necessary examinations. This highlights the need to rationalize prescriptions, taking into account the benefit/risk ratio. The EPAGE II criteria (European Panel on the Appropriateness of Gastrointestinal Endoscopy) [14] are used to assess the relevance of these indications.

The aim of our study is to evaluate real life application of these criteria in clinical and hospital settings, and to investigate a possible correlation between the relevance of the examination and the endoscopic result.

Keywords: Colonoscopy; EPAGE II; Appropriateness; Endoscopic Results; Diagnostic Criteria

1. Introduction

The growing demand for colonoscopy highlights the importance of evaluating the appropriateness of its indications. Our study assesses the relevance of colonoscopy prescriptions in clinical practice using the EPAGE II criteria and explores their correlation with endoscopic findings.

2. Materials and Methods

- This is a retrospective analytical study, extended over a 4-month period.
- It included patients who had undergone colonoscopy with or without catheterization of the terminal ileum in the endoscopy unit of the gastroenterology department of Rabat University Hospital.
- Patients in whom colonoscopy was not totalized and patients refusing to participate in the study were excluded.
- Data collected were: age, sex, history, indication, lesions found and EPAGE score from their software.

2.1. Statistical Study

Data were analyzed using Jamovi 2.3.9.0 software. Continuous variables are presented as mean \pm standard deviation or median with interquartile ranges. Categorical variables are presented as numbers. Comparisons between categorical variables were made using chi-square tests and Fisher's exact test, depending on the conditions of application. Risk factors were analyzed using linear regression, with a p-value < 0.05 considered significant.

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3. Results

- Out of over 180 colonoscopies, 150 patients who met the inclusion criteria were included, 83 women (55.3%) and 67 men (44.7%) with a sex ratio of 1.2. The median age was 55 years {39.3 ;64.8}, divided into 87 patients (58%) aged over 50 years and 63 patients (42%) aged 50 years or less.
- The majority of patients 86 (57%) had no previous history of IBD, 27 (18%) patients had IBD (17 CD (11.3%) and 10 UC (6.7%)) and 9 patients had heart disease (6%).
- Patients underwent colonoscopy for the following indications: chronic diarrhea 29 (19.3%); rectal discharge 26 (17.3%), constipation 18 (12%); screening 17 (11.3%); therapeutic evaluation 16 (10.7%); iron-deficiency anemia 15 (10%) and abdominal pain in 10 cases (6.7%).
- The EPAGE score assessed the indication as: appropriate and necessary 65 (43.3%), appropriate 51 (34%), uncertain 24 (16%) and inappropriate 10 (6.7%). (Table 1)
- The most frequent indication for which the EPAGE criteria deemed it inappropriate was constipation in subjects under 50 years of age 10 (6%).

Table 1 Indications for colonoscopy according to EPAGE II criteria

Indication	Appropriate and Necessary (%)	Appropriate (%)	Uncertain (%)	Inappropriate (%)	Total
Chronic diarrhea	24 (82,8%)	5 (17,2%)	0 (0%)	0 (0%)	29 (19,3%)
Rectal bleeding	15 (57,7%)	9 (34,6%)	2 (7,7%)	0 (0%)	26 (17,3%)
Constipation	6 (33,3%)	5 (27,8%)	0 (0%)	7 (38,9%)	18 (12%)
Screening	12 (70,6%)	4 (23,5%)	1 (5,9%)	0 (0%)	17 (11,3%)
Therapeutic evaluation	3 (18,8%)	8 (50%)	5 (31,3%)	0 (0%)	16 (10,7%)
Iron-deficiency anemia	4 (26,7%)	8 (53,3%)	3 (20%)	0 (0%)	15 (10%)
Abdominal pain	1 (10%)	7 (70%)	2 (20%)	0 (0%)	10 (6,7%)
Total	65 (43,3%)	51 (34%)	24 (16%)	10 (6,7%)	150 (100%)

After colonoscopy, an endoscopic lesion was found in 67 patients (44.7%) (table 2), the most frequent being a colonic polyp in 15 (22.3%), a tumoral process in 11 (16.4%) and an endoscopic recurrence of IBD in 8 (11.9%).

Among patients with indications deemed inappropriate, 3 (4.4%) had significant endoscopic lesions.

Table 2 Endoscopic lesions found according to EPAGE II score

	Appropriate and Necessary	Appropriate	Uncertain	Inappropriate	Total
Endoscopic Findings	34 (50.7%)	19 (28.3%)	11(16.4%)	3 (4.4%)	67 (100%)

For meaningful statistical analysis, an appropriate and appropriate and necessary score were combined. After statistical analysis, in univariate analysis, constipation, chronic diarrhea and age over 50 years were associated with an EPAGE score of appropriate indication for performing colonoscopy with a p value of $p=0.032$, $<.001$, and $p=0.026$ respectively, but in multivariate analysis, only constipation and age came back statistically significant. (table 3).

Table 3 Factors associated with appropriate indication

	Univariate Analysis			Multivariate Analysis		
	OR	IC =95%	P value	OR	IC =95%	P value
Age ≥ 50 years	2.425	[1.112-5.291]	0.026	4.438	[1.8232-10.803]	0.001
Sex	0.832	[0.384-1.805]	0.642	0.841	[0.354-1.993]	0.694
Indications						
Constipation	0.307	[0.110-0.854]	0.024	0.289	[0.089 -0.938]	0.039
Chronic Diarrhea	1.11	[1.38-2.291]	< .001	2.509	[1.06-5.8]	0.988
Rectal bleeding	0.756	[0.288-1.985]	0.569	-	-	-
Presence of endoscopic lesions	1.202	[0.554-2.607]	0.642	1.044	[0.429-2.538]	0.925

4. Discussion

Between 1998 and 2004, the number of colonoscopies performed in the United States tripled or even quadrupled [1]. However, there is little precise data on the evolution of the number of colonoscopies in Asia and Europe, although trends suggest a significant increase, particularly in connection with screening programs in these regions. Today, colonoscopy is the most common digestive endoscopy procedure, both in the USA [2] and in Europe [2, 4], thanks to advances in diagnostic and therapeutic accuracy and efficacy. New endoscopic techniques [1, 5], sedation methods [6] and increased colorectal cancer (CRC) screening [7] all contribute to this rise.

However, the increase in inappropriate colonoscopies, which do not follow clinical guidelines, are a serious problem for healthcare systems sustainability. These unwarranted procedures increase costs and waiting times, and can affect the quality of care. In addition, although rare, colonoscopy can have complications which include an estimated risk of perforation of 0.6 per 1000 procedures and post-polypectomy bleeding of 8.7 per 1000. Adverse cardiovascular events are observed in 19.4 cases per 1000 procedures. These risks increase with age, reaching a level 75% higher in people aged 80 to 84 compared with those aged 66 to 69. [8]. It is therefore important to respect appropriate indications, where the benefits for the patient outweigh the risks, in order to optimize the use of resources [9].

The EPAGE I criteria, created in 1998, were used to assess the appropriateness of colonoscopy indications [10]. Updated in 2008, the EPAGE II version is based on the best available evidence and assesses the benefits, efficacy, safety and side effects of colonoscopy. Clinical indications include iron-deficiency anemia, hematochezia, nonspecific abdominal symptoms, chronic diarrhea, IBD evaluation, CRC screening, post-polypectomy surveillance or after curative resection, with scores classified as appropriate (≥ 7), uncertain (4-6), or inappropriate (1-3) [9].

Our study highlights the relevance of colonoscopy indications according to EPAGE II criteria, with particularly high results for chronic diarrhea and colorectal cancer screening. The work of Samarakoon et al [12] also confirms high rates of relevance for rectal bleeding and changes in bowel habits, highlighting the clinical importance of these symptoms. Chronic diarrhea, significantly associated with an appropriate indication in our study ($p < 0.001$), it may indicate serious conditions such as infections, inflammatory bowel disease or malignancies. Therefore, a thorough evaluation of these symptoms is essential to exclude serious pathologies and ensure the appropriateness of colonoscopy.

The study by Silvia Carrión et al [11] identified abdominal discomfort and post-polypectomy control as indications frequently deemed inappropriate for colonoscopy. In addition, it showed that constipation, particularly in young patients, is often functional and could be managed symptomatically before resorting to colonoscopy.

In our study, age played a key role in the selection of constipation as an appropriate indication. Data from our series show that the majority of patients presenting with constipation were elderly, with a median age of 62 and a clear predominance of patients over 50. This observation explains why constipation was considered an appropriate indication in our series. Conversely, in younger patients (under 50), constipation is often functional and, in the majority of cases, does not require immediate colonoscopy.

However, the EPAGE II criteria, which do not always take account of age-related specificities, can lead to erroneous assessments. For example, when constipation is associated with an age below 50, the score may distort the assessment, giving us an inappropriate score and therefore not allowing us to differentiate between cases where a colonoscopy is really necessary to exclude serious pathologies. This shortcoming highlights the need to improve existing criteria so that they incorporate factors such as age, duration of symptoms and medical history, in order to reduce overuse of colonoscopy and optimize patient management.

Rectal bleeding, although often associated with significant endoscopic findings in our study, showed no statistically significant relationship with the presence of significant lesions. This contrasts with the findings of Carrión et al [11] and Gimeno García AZ et al [13], who found a significant association between rectal bleeding and serious pathologies such as colorectal cancer (CRC). This discrepancy suggests that, although rectal bleeding is a common indication for colonoscopy, it can sometimes result from less serious conditions, such as hemorrhoids or minor mucosal lesions, which do not always lead to significant endoscopic findings.

The absence of a significant relationship between rectal bleeding and the presence of lesions in our study indicates that this symptom has a variety of etiologies. The majority of which are benign. This underscores the importance of a thorough clinical evaluation to determine the need for colonoscopy in the case of rectal bleeding, taking into account age and all possible diagnoses.

Patients aged over 50 have a higher probability of obtaining an appropriate EPAGE II score ($p = 0.024$), corroborating the work of Gimeno García AZ et al [13] and Samarakoon et al [12]. This underlines the importance of colonoscopy in this age group, due to the increased risk of colorectal cancer (CRC) and other serious gastrointestinal pathologies. The association between age and the need for colonoscopy highlights the importance of adhering to regular CRC screening recommendations for this age group, thereby promoting the detection of significant lesions.

In our study, significant lesions were detected in 44.7% of patients, with colonic polyps and tumoral processes being the most frequent. Samarakoon et al [12] report slightly higher results, with 48.3% of significant lesions, among patients with indications deemed inappropriate, 3 (4.4%) had significant endoscopic lesions, a lower figure than the 14.9% reported by Silvia Carrión et al [11], who studied 700 patients. This difference raises questions about the reliability of the EPAGE score. Indeed, although 4.4% and 14.9% of patients deemed inappropriate presented with lesions, this suggests that the score may not always correctly capture cases where colonoscopy is actually required, highlighting the need to review some of the score's criteria to better target indications and avoid overuse or omission of colonoscopies.

The results of our study reinforce the relevance of EPAGE II criteria in colonoscopy decision-making, particularly with regard to age and chronic symptoms such as constipation. It is important to refine these guidelines, taking into account patient demographics and specific indications, in order to optimize the diagnostic utility of colonoscopy.

5. Conclusion

Although the EPAGE II criteria are useful for assessing the suitability of colonoscopy, it is crucial to refine them and follow updated guidelines to ensure an appropriate and effective procedure. Variations in adequacy rates and the detection of significant lesions in indications deemed inappropriate highlight the need to improve screening protocols to optimize patient outcomes.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Written informed consent was obtained from the patient for their anonymized information to be published in this article.

Author contributions

All authors have contributed to the conduct of this work. All authors also declare that they have read and approved the final version of the manuscript.

Declaration of interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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