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Evidence-based considerations on bowel preparation for colonoscopy

Argyriou K *et al.* Evidence-based considerations on preparation for colonoscopy

Abstract

We recently read with interest the article Novel frontiers of agents for bowel cleansing for colonoscopy. This is a practical narrative review, which could be of particular importance to clinicians in order to improve their current practice. Although we appreciate the venture of our colleagues, based on our in-depth analysis, we came across several minor issues in the article and hence, we present our comments in this letter. If authors consider these comments further in their relevant research, we believe that their contribution would be of considerable importance for future studies.

Key Words: Colonoscopy; Bowel preparation; Polyethylene glycol; Post-polypectomy syndrome; Post-polypectomy complications

Argyriou K, Parra-Blanco A. Evidence-based considerations on bowel preparation for colonoscopy. *World J Gastroenterol* 2022; In press

Core Tip: Colonoscopy is the gold standard investigation for the detection and treatment of colorectal neoplasia. The effectiveness and safety of the procedure mainly depends on the quality of bowel preparation (BP). Although international guidelines underline methods to ensure adequate BP, inadequate BP occurs in approximately one third of the colonoscopies. The search for an ideal regimen to improve BP remains. The article by authors addressed this issue successfully, but we detected several minor issues. Therefore, we would like to share our views and opinions on this interesting review.

TO THE EDITOR

We read with great interest the frontier article Novel frontiers of agents for bowel cleansing for colonoscopy^[1]. Although the authors follow the infrastructure of the updated version of the European Society of Gastrointestinal Endoscopy Guideline on bowel preparation (BP) for the main part of their article, they do not make absolutely clear to the reader the way they selected the studies included in their own updated

review^[2]. Despite this shortcoming, in general the authors summarize the major findings of several reference studies successfully. The salient highlight of this article is that Di Leo *et al*^[1] address the issue of BP holistically, from cleansing agents to the multifaceted outcomes of the currently followed BP strategies in specific populations, such as those with congestive heart failure or chronic renal failure, disclosing areas that need to be further investigated. However, we believe that the most striking point of this article is the introduction of the novel term “post colonoscopy syndrome”, which sums up all the minor complications that an individual could develop post colonoscopy, worsening his/her quality of life. Therefore, this research has a ¹strong reference and practical value for future studies, overcoming limitations. Nevertheless, through our in-depth reading, we found several shortcomings and anticipate a discussion with the authors.

Initially, we agree with the authors that the assessment of the quality of BP is of utmost importance. Adequate BP is crucial, not only to the efficacy and safety of colonoscopies, but also for awarding privileges to the endoscopists^[3]. However, there are no universally accepted criteria that endoscopists can use for the assessment of the quality of BP. As a result, at least five quality assessment scales have been currently fully or partially validated and used in daily practice for the assessment of the quality of BP, inducing significant heterogeneity when quality results are compared among different studies. The unanimous approval of a single scale is expected to resolve this issue, but is still awaited^[3]. By comparing the specific characteristics of all available scales, the authors can disclose areas that need to be further investigated, facilitating endoscopists to reach consensus. However, in this article, the authors only refer to ²the Ottawa Bowel Preparation Quality Scale, Boston Bowel Preparation Scale and the partially validated Aronchick Scale, excluding other validated scales, such as the Harefield Cleansing Scale which was the first scale to be developed^[3]. This limitation leaves an initial critical step under-discussed in this review, perpetuating confusion.

In their summary of current evidence, the authors focus on high and low volume polyethylene glycol (PEG)-based preparations, leaving non-PEG-based solutions that have been found to be of equal efficacy to PEG-based formulas under-reviewed. The

reason behind this exclusion is not mentioned. However, it constitutes an omission. For example, in this article, the authors do not discuss lactulose, a semi-synthetic derivative of lactose that, after fermentation, stimulates intestinal motility and increases osmotic pressure within the colon. Accumulated evidence from clinical trials suggest that lactulose has similar efficacy to PEG-based solutions with acceptable safety when used for BP not only in individuals undergoing ambulatory colonoscopy, but also in those undergoing colonoscopy for lower gastrointestinal bleeding^[4-6]. These results expand the armamentarium of our available solutions for BP and hence, all the relevant information should be supplemented in this review.

In addition to the under-discussed non-PEG based solutions, the authors provide sparse data regarding the safety of using non-PEG based and PEG-based preparations in specific populations. Although the authors quote evidence on the effectiveness and safety of these agents in various patient populations included in this review, their efficacy and safety in patients with liver cirrhosis are not examined. The reason behind this exclusion is not mentioned by the authors, leaving a critical step under-discussed in this review. Patients with cirrhosis demonstrate alterations in physiology and hemodynamics that make them vulnerable to develop electrolyte imbalances during BP^[7]. Osmotically balanced solutions have been shown to be effective and safe for the management of hepatic encephalopathy in this patient population^[8]. However, little is known regarding their safety when used for BP as patients with liver cirrhosis are often excluded from randomized controlled trials comparing different bowel cleansing agents. In a recent study that examined the safety and efficacy of low-volume and high-volume PEG based solutions in 166 patients with liver cirrhosis, it was shown that both formulations can be effectively and safely used for BP with low-volume formulations showing better acceptability and compliance^[9]. Considering the absence of an established BP protocol in patients with liver cirrhosis, we believe that all the relevant information should be included in this review, allowing the reader to acquire a detailed overview of the subject.

Another shortcoming lies at the reference of the agents intended to improve patient experience. More specifically, the authors suggest that the menthol candy drops improve

BP in the candy drops-added group compared to controls, with no benefit in side effects. However, in the reference trial, other than the efficacy, the trial authors state that menthol drops improve nausea (24.5% drops *vs* 4% controls; $P = 0.04$). Since this finding is important, this detail should be clarified^[10].

Finally, the authors make an effort to shed light onto the pathophysiology of minor post-colonoscopy complications that mainly include the symptoms of pain, discomfort and bloating, defined as post-colonoscopy syndrome (PCS). We agree that the post BP changes in microbiota composition contribute to the occurrence of PCS. However, we believe that this is the tip of the iceberg. In order to understand the pathophysiology of PCS accurately, researchers should look into the complex mechanisms of abdominal pain and study the impact of BP in all of them^[11]. Previous evidence suggest that mucosal changes occurring secondary to colonic over-distension during colonoscopy as well as stress, inflammation, ischemia, pH, bacterial products, immune mediators, and neurotransmitters can all be related to visceral pain^[12-16]. But, whether BP can have a negative impact is unknown. Future studies should aim to investigate these complex relationships and unravel the exact role of BP in the pathophysiology of PCS, as their results may allow clinicians to mitigate the negative effects and increase the individual acceptance of colonoscopy.

In summary, this review can be a valuable reference study, guiding clinicians in their daily practice. We offer our evidence-based considerations on the shortcomings of this review in an effort to further increase the value of the review and direct more comprehensive future studies. But, whether BP can have a negative impact is unknown. Future studies should aim to investigate these complex relationships and unravel the exact role of BP in the pathophysiology of PCS, as their results may allow clinicians to mitigate the negative effects and increase the individual acceptance of colonoscopy. In summary, this review can be a valuable reference study, guiding clinicians in their daily practice. We offer our evidence-based considerations on the shortcomings of this review in an effort to further increase the value of the review and direct more comprehensive future studies.

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