



Contents lists available at ScienceDirect

Journal of Pediatric Surgery

journal homepage: www.elsevier.com/locate/jped surg.org

Correspondence

Why and when does an enema provoke abdominal pain? Reaction to the article by Peña et al.

Dear Editor,

In the November issue of the Journal of Pediatric Surgery, an article was published by Peña et al. "Enema-induced spastic left colon syndrome: an unintended consequence of chronic enema use" [1], which raised important points arising in the treatment of patients with severe chronic constipation and fecal incontinence. The authors describe 22 patients complaining of increasing time to evacuate the enema fluid along with enema-induced colicky abdominal pain. I would like to add several comments about this paper.

I X-ray analysis: the authors state that "Contrast studies in these patients have shown a startling picture of severe dilatation of the right colon, followed distally by a very impressive, narrow, left portion of the transverse colon, as well as descending and rectosigmoid colon" [1]. Of the 7 radiographs presented in this article with the caption "Contrast enema shows dilated right and narrow left colon", the right colon is visible only on two radiographs (see in the article Figs. 2 and 3). The radiometric analysis described in one of our papers [2] showed that on these two radiographs the width of the right colon is within the age norm. On all 7 radiographs, the left colon is without haustration and it is either narrowed relative to the norm, or round fecal stones are clamped in it look like a rosary.

The authors assessed the width of the colon lumen by comparing the right half with the left as if they must be equal. However, the width of different colonic segments is equal only in children of the first year of life. In the process of ontogenesis, the width of the lumen of all colonic segments increases, but not evenly. So, for example, in adolescence, the width of the ascending colon is almost 3 times wider than that of the descending colon (Fig. 1).

The narrowing of the left colon, the absence of haustration, and the symptom of a rosary indicate a high bowel tone. This X-ray picture resembles colitis. Since stretching of the intestine with water caused severe pain, this combination of symptoms corresponds to irritable bowel syndrome [3]. At the same time, the width of the right colon, where it is visible on radiographs, does not go beyond the age limit. In a case described by our department of a severe form of irritable bowel syndrome caused by prolonged use of Senna, the right colon was also narrow [4].

II. Analysis of literary sources (References) from Peña et al.: to find out if this condition had been reported before, the authors selected the papers specifically describing the antegrade or retrograde use of enemas for the treatment of fecal incontinence, and severe intractable constipation. In analyzing the articles cited by the authors, only in two of the 36 articles we found mention of pain during an enema. In these two reports [5,6], the pain during the enema did not appear after numerous procedures, but at the beginning of treatment. Therefore, enemas did not appear to be the

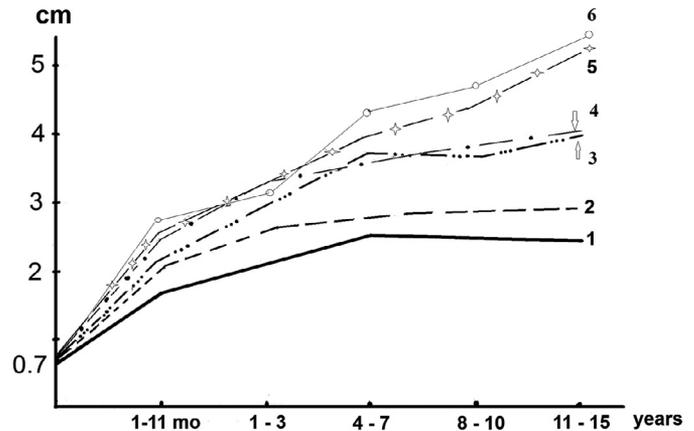


Fig. 1. Scheme of expansion of the different parts of the colon and rectum in different age groups: 1 – sigmoid colon; 2 – descending colon; 3 – rectum; 4 – transverse colon; 5 – cecum; 6 – ascending colon. The graph is based on the average values from the table of age norms [2].

cause of the radiographic findings noted in the paper Peña et al. [1]. In the systematic review and meta-analysis by Emmett et al., it is emphasized: "Adverse events were inconsistently reported but were commonplace and minor" [7].

Thus, the analysis of the literature does not give any reason to suspect that the long-term use of antegrade and retrograde enemas can lead to serious damage to the colon, such as colitis or irritable bowel syndrome.

III. Bowel management by Pena et al. It is known from the literature that the bowel management program by Pena et al. includes the amount of Senna, "which usually is higher than what they previously received and is 2, 3, 4, 5 or 10 times more than what the books recommend" [8]. However, Senna causes severe abdominal pain, as evidenced by the experience of the same authors. So, for example, in the article of Bischoff et al., it is written that "If the dose of the laxative provokes abdominal cramping, distension, and vomiting, without producing bowel movements, patients are considered nonmanageable" [9]. Detailed protocol analysis is given in my prior letter to the editor [10].

Discussion and conclusion

As shown above, long-term enemas did not find any negative effects of the saline solution on the colon. In a systematic review for evaluating the evidence regarding the adverse effects of herbal medicines, serious adverse effects were noted only for four: *Herbae pulvis standardisatus*, *Larrea tridentate*, *Piper methysticum* and *Cassia senna* [11]. Senna preparations stimulate colonic contractions and had more influence/toxicity on the kidneys and livers [12]. The use of this laxative causes abdominal pain because of se-

vere muscle spasms. Long-term use of large doses of Senna causes irreversible damage to the motor function of the colon, which is more pronounced in the left half. The enema that normally causes only the sensation of movement causes, in patients with irritable bowel syndrome, severe pain. Thus, Senna is a damaging factor, and an enema, that stretches the gut is a pain provocateur.

Reference

- [1] Peña A, de La Torre L, Belkind-Gerson J, Lovell M, Ketzer J, Bealer J, Bischoff A. Enema-induced spastic left colon syndrome: an unintended consequence of chronic enema use. *Pediatr Surg* 2020. doi:10.1016/j.jpedsurg.2020.10.027.
- [2] Levin MD. Reaction to Koppen et al., 'Assessing colonic anatomy normal values based on air contrast enemas in children younger than 6 years'. *Pediatr Radiol* 2018. doi:10.1007/s00247-018-4181-1.
- [3] Ritchie J. Pain from distension of the pelvic colon by inflating a balloon in the irritable colon syndrome. *Gut* 1973;14(2):125–32. doi:10.1136/gut.14.2.125.
- [4] Levin MD, Korshun Z, Mendelson G. Rare case of surgical treatment of the irritable bowel syndrome. *Novosti chirurgii* 2012;20(5):123–6.
- [5] Marshall L, Hutson JM, N Anticich N, Stanton MP. Antegrade continence enemas in the treatment of slow-transit constipation. *J Pediatr Surg* 2001;36(8):1227–30. doi:10.1053/jpsu.2001.25768.
- [6] Bildstein C, Melchior C, Gourcerol G, et al. Predictive factors for compliance with transanal irrigation for the treatment of defecation disorders. *World J Gastroenterol* 2017;23(11):2029–36 21. doi:10.3748/wjg.v23.i11.2029.
- [7] Emmett CD, Close HJ, Yiannakou Y, Mason JM. Trans-anal irrigation therapy to treat adult chronic functional constipation: systematic review and meta-analysis. *BMC Gastroenterol* 2015;15:139. doi:10.1186/s12876-015-0354-7.
- [8] Bischoff A, Levitt MA, Peña A. Bowel management for the treatment of pediatric fecal incontinence. *Pediatr Surg Int* 2009;25(12):1027–42 Epub 2009 Oct 15. doi:10.1007/s00383-009-2502-z.
- [9] Bischoff A, Brisighelli G, Dickie B, Frischer J, Levitt MA, Peña A. Idiopathic constipation: a challenging but manageable problem. *J Pediatr Surg* 2018;53(9):1742–7. doi:10.1016/j.jpedsurg.2017.09.022.
- [10] Levin MD. Letter to the editor ("Are Senna based laxatives safe when used as long treatment for constipation in children?"). *J Pediatr Surg* 2018;53(8):1634–5 Epub 2018 Mar 20. doi:10.1016/j.jpedsurg.2018.03.007.
- [11] Posadzki P, Watson LK, Ernst E. Adverse effects of herbal medicines: an overview of systematic reviews. *Clin Med* 2013;13(1):7–12. doi:10.7861/clinmedicine.13-1-7.
- [12] Cao Y, He Y, Wei C, et al. Aquaporins alteration profiles revealed different actions of Senna, Sennosides, and Sennoside A in diarrhea-rats. *Int J Mol Sci* 2018;19(10):3210. doi:10.3390/ijms19103210.

Michael David Levin, MD, PhD, DSc, Radiologist
 Department of Pediatric Radiology of the 1-st State Hospital, Minsk,
 Belarus. Dorot-Netanya Geriatric Medical Center, Israel. Amnon
 VeTamar, 1/2, Netanya, 42202, Israel
 E-mail addresses: nivel70@hotmail.com,
 michael.levin@gri.health.gov.il