

## Colonic Irrigations: A Review of the Historical Controversy and the Potential for Adverse Effects

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### ABSTRACT

Colonic irrigations enjoy widespread popularity among alternative medicine practitioners, although they are viewed with considerable skepticism by the conventional medical community. Although proponents make claims of substantial health benefits, skeptics cite the lack of evidence for health benefits and emphasize the potential for adverse effects. Yet historically, there are clinical reports of effectiveness and virtually no research refuting these reports. Instead there was a campaign against exaggerated claims by nonmedical practitioners that resulted in a movement away from this form of therapy without any scientific study of efficacy. Given the current popularity of colonic irrigations, it is important that such research be performed, which will require a quantitative estimate of the potential for adverse effects. Although there is little specific literature on colonic irrigations, a review of the literature on related procedures such as enemas and sigmoidoscopies suggests that the risk of serious adverse effects is very low when the irrigations are performed by trained personnel using appropriate equipment.

### INTRODUCTION

Colonic irrigations enjoy widespread popularity among alternative medicine practitioners, while being viewed with considerable skepticism by the conventional medical community. The medical objections include a belief that scientific research has proved that colonics are not effective therapy, and that they pose a high risk of serious adverse effects.<sup>1</sup> Furthermore there is a concern that those administering colonics are primarily unlicensed, nonmedical practitioners who make exaggerated claims of health benefits.<sup>2,3</sup> The goal of this paper is to provide a balanced perspective for clinicians and researchers through a review of the historical information on the safety and efficacy of colonic irrigations, and bring in relevant information on adverse effects. This paper focuses primarily on peer-reviewed sources, rather than attempting to evaluate the numerous books and papers on this topic in the popular literature.

Colonics are distinguished from enemas in that they are not self-administered, but instead are provided by a person

with some training; and they are administered using some type of device to control the water flow. Their purpose is to infuse the entire colon with water, in contrast to the more limited infusion of water in an enema. Water temperature and pressure are closely monitored and regulated during a series of fills and releases. Because the method involves an enclosed system, the waste materials are removed without the unpleasant odors or discomfort usually associated with enemas.

The modern medical attitude toward colonic irrigations suffers from a lack of information about the historical debate on their safety and efficacy. The history that has been presented by some modern authors<sup>1,4</sup> does not address the debate among physicians regarding the value of colonics, instead focusing on the campaign against the practitioners (called “quacks” by their opponents). In parallel with the crusade against quackery, there was a reasoned debate among physicians, conducted in the *Journal of the American Medical Association (JAMA)* and other medical journals, on the therapeutic value of colonics. That debate was

not resolved by scientific research on colonics, but rather from a combination of hostility toward colonics by the opponents of quackery and the shift in medical practice from physical therapies to drug therapies. This paper looks at the literature from the 1920s and 1930s that shows a serious debate on the value of colonics.

## BACKGROUND

The rationale for colonic irrigation originally was based on the concept of “autointoxication.” Autointoxication is an ancient theory founded on the belief that toxins originating in the intestine can enter the circulation and poison the body.

Colonic irrigations as a treatment for autointoxication became popular in the late 1800s and early 1900s. Kelvinson<sup>5</sup> cites a variety of respected physicians of the time who advocated colonic irrigations, noting that even the Royal Society of Medicine in 1913 cited the colon as a major factor in health.

Whorton<sup>4</sup> says, “By the 1930s, most physicians no longer believed in autointoxication . . . even the most sober and fair minded physicians found it difficult to be dispassionate about colonic irrigation and evaluate it purely on its merits, because of their anger at the rampant exploitation of public gullibility by bowel purity hucksters” (p. 138).

The political reaction against lay practitioners is most clearly seen in the position of Arthur Cramp, in what was originally called the “Propaganda Department” of the American Medical Association.<sup>1</sup> The book, *Nostrums and Quackery*, that he edited for the AMA Press,<sup>6,7</sup> particularly takes issue with Charles Tyrrell’s “J.B.L. Cascade,” a home enema device that consisted of a water-filled cushion with a nozzle. Despite the anticolonial stance of Cramp and his committee, the editor of *JAMA*<sup>8</sup> provided a favorable description of the appliance and specific advice to a medical doctor with a question about the efficacy of the device. Again, there seem to be two separate communities, the antiquackery advocates, and the doctors seriously interested in the therapeutic possibilities of colonic irrigations.

Notably absent, both from Whorton’s<sup>4</sup> historical account, and reviews such as that of Ernst<sup>1</sup> are references to objective research on either the safety or efficacy of colonic irrigations. Ernst cites Donaldson<sup>9</sup> as refuting the autointoxication hypothesis, yet Donaldson’s study involved enemas, not colonic irrigations, had only five subjects, and ruled out autointoxication only by inference.

Donaldson’s results are actually supportive of the clinical value of enemas. Donaldson, skeptical of the autointoxication hypothesis, performed an experimental study in which five subjects voluntarily made themselves constipated for 4 days. He measured the symptoms of “autointoxication” that appeared (i.e., coated tongue, markedly foul breath, chancre sores, impaired appetite, mental sluggishness, depression, restlessness, irritability, unrefreshing sleep, and

headache). He measured reaction time of the nervous system, basal metabolism, blood sugar, and rate of muscle fatigue—all showed impairment. After cleansing enemas (not full colonic irrigations) in all cases the nervous system symptoms improved and the physiologic parameters returned to baseline levels. Assuming that the rapid relief was too sudden to be caused by toxicity, Donaldson concluded that the result had to result from relief of mechanical pressure (distention of the lower bowel by fecal masses). In this conclusion he was following Alvarez,<sup>10</sup> who had found that mechanically plugging the rectum resulted in the same sorts of toxic symptoms. Donaldson replicated the Alvarez finding by packing and unpacking the rectums of four further subjects, with the same results as the constipation experiment.

Alvarez,<sup>10</sup> writing in *JAMA*, discusses the lack of evidence for the theory of intestinal toxemia. Alvarez makes a case for the “toxic” symptoms being produced by nervous system reflexes. He speaks of “how profoundly sensory inputs from our digestive tracts can influence our emotions, our mental processes and our vasomotor balance” (p. 11). It is not surprising that there are reflexes from the colon that affect the entire nervous system. It is estimated that 80% of vagal fibers are visceral afferents.<sup>11</sup> There is also a vast overlap of neuropeptide activity in the gut and brain.<sup>12</sup>

Another issue regarding intestinal toxemia was addressed by Dragstedt et al.<sup>13</sup> from the Mayo clinic. They accepted that intestinal toxemia could cause disorders, but questioned whether administration of antiseptics was a useful treatment. Working with dogs, by surgically closing isolated segments of bowel, they were able to produce the symptoms of toxemia, and showed that the symptoms disappear when the closed segment is removed.

Regardless of the correctness of the autointoxication hypothesis, early experiments such as those of Alvarez, Donaldson, and Dragstedt demonstrate the widespread systemic effects of relatively minor manipulations of the colon. It is interesting, then, that both proponents and opponents of colonics have paid no attention to this finding, providing little new information beyond that from the 1920s.

### *Clinical experience with colonic irrigations*

A variety of books from the 1920s and 1930s by the proponents of colonic irrigations attest to their clinical value.<sup>14-17</sup> At the same time, the American Medical Association was zealously attacking “quackery,” with colonic irrigations as a particular target.<sup>7</sup> However, in the absence of peer review, there is no way to evaluate the claims that are made on either side of the debate. Instead, this review focuses on the papers in the refereed journals of the time, especially *JAMA*.

Satterlee and Eldridge,<sup>18</sup> writing in *JAMA*, discussed the symptomatology of the nervous system in chronic intestinal toxemia. Far from considering autointoxication an outdated

hypothesis, they note the “newly found and rapidly developing relationship between mental and nervous conditions and disturbances of the intestinal tract” (p. 1414). They describe a variety of treatments, some far more severe than colonic irrigations (e.g., surgery to remove parts of the colon). It is easy to see why, given the apparent relief from symptoms, the far less invasive colonic irrigations were preferred by many physicians.

Further evidence that colonic irrigations were not universally condemned in the 1920s and 1930s is provided by an article by Bastedo<sup>19</sup> in *The New England Journal of Medicine*. Bastedo was opposed to the “commercialized irrigation specialists, who are unduly numerous but do a thriving business” (p. 736). However, he emphasized that “The insertion of liquids into the rectum has been an approved therapeutic procedure since ancient times” (p. 865), distinguishes irrigations of the entire colon from simple enemas, and gives detailed recommendations for their administration.

Arthritis is a disorder where there seemed to be some clinical evidence of efficacy of colonics.<sup>20,21</sup> Snyder and Fine-man<sup>22</sup> give several case reports suggestive of the efficacy of colon cleansing in cases of arthritis and cite several clinicians in addition to Pemberton who have this perspective.<sup>23–26</sup>

A review article by Friedenwald and Morrison<sup>27</sup> is especially detailed, and at a relatively late date assesses colonic irrigations very positively. These doctors (from the Gastro-Enterological Clinic of the Department of Medicine at the University of Maryland) begin with a historical perspective, noting that only recently (1932) the approval of the Council on Physical Therapy of the American Medical Association was sought for a large number of new colonic irrigation devices. Friedenwald and Morrison conclude by saying, “It is our opinion that if colonic irrigations are correctly used in selected cases they fulfill an important therapeutic need” (p. 1628).

In 1936 *JAMA* published a review of colonic irrigations authorized by the Council on Physical Therapy, authored by Frank Hammond Krusen, Professor of Physical Medicine at the Mayo Clinic.<sup>28</sup> Although generally skeptical, Krusen gives a balanced review of the pros and cons of colonics. He acknowledges that, “One finds that among physicians of unimpeachable medical integrity there are widely divergent views concerning the value of colonic irrigations” (p. 118).

On the “pro” side, he notes that physicians treat a variety of conditions with colonic irrigation, including Pemberton’s claims in the treatment of arthritis. He also cites Stroud,<sup>29</sup> who advocates colonics in the treatment of cardiovascular disease, and Weisenberg and Alpers,<sup>30</sup> who note that, “High colonic irrigations are of value in some cases of so-called toxic myelitis” (p. 119). Krusen also cites Morgan and Hite,<sup>31</sup> who see value in colon cleansing, but notes the need for recognition that such a treatment can be harmful if carried beyond limits called for by the specific ailment.

On the “con” side, Krusen has two main points. The first

is that colonics can have adverse effects, such as cramps, irritation, and perforation of the wall of the colon. It is interesting, though, that his source for these adverse effects is Bastedo, who is a proponent of the careful use of colonic irrigations. His second main point is that, in his own experience, colonic irrigations have little use in the hospital setting; his preference is for simple enemas to relieve constipation when necessary.

Thus, in the late 1930s, there was a reasoned debate on colonic irrigations, documented in *JAMA*, despite the crusaders against “quackery.” The themes in these *JAMA* articles up through the 1930s are clear: The problem is not that there is anything intrinsically wrong with colonic irrigations. Rather: (1) there are clinical observations from a variety of physicians and studies supporting the efficacy of colonics; (2) evidence for the autointoxication hypothesis is weak, although there is support for aberrant nervous system reflexes in the colon as a pathophysiologic factor in some conditions; and (3) although administration under a physician’s supervision is a reasonable therapeutic procedure, the inflated claims and sometimes extreme procedures employed by nonmedical practitioners are not advised. This balanced perspective appears to have been squeezed out by the crusaders against quackery, a trend that has continued to this day.

## ADVERSE EFFECTS

The potential for adverse effects from colonic irrigations must be addressed, both for informed consent in research, and for assessing risk of therapeutic applications. There is a need to determine to what degree the common medical criticism of colonic irrigations, that there are serious adverse effects,<sup>1</sup> is valid. For informed consent it is important to have a quantitative estimate of the potential for adverse effects. However, reports of adverse effects from colonic irrigations of the type we are discussing (performed on individuals without serious bowel disease, by trained colon hydrotherapists, using disposable nozzles) appear to be very rare, despite the widespread popularity of colonics as an alternative health modality. We have found only two reports on MEDLINE®. One is the oft-cited case of amebiasis from improperly sterilized equipment at a chiropractic clinic in Colorado.<sup>32</sup> The other is a case of rectal perforation in Singapore.<sup>33</sup>

Because there are no specific data on colonic irrigations, the closest comparisons would be enemas and sigmoidoscopies. Enemas typically only stimulate the first part of the colon, the sigmoid colon, and are not intended to cleanse the entire colon as is a colonic irrigation. Often an enema is given before a more invasive procedure such as a sigmoidoscopy in which a tube is introduced into the colon. In a sigmoidoscopy, the tube (with a fiberoptic camera) goes only as far as the sigmoid colon and may include biopsies or removal of polyps. In contrast, the tube for a colonic ir-

rigation is inserted approximately 3 inches into the colon, and no procedure such as biopsy is performed. For these reasons, any estimate of adverse effects based on sigmoidoscopies would likely show a substantially greater risk than is actually found with colonic irrigations.

### *Risk of perforation*

Perforation of the wall of the colon is often seen as the most serious adverse effect of any procedure that introduces something into the colon. Perforation can be mechanical (e.g., puncture by the tip of the tube) or caused by excessive pressure causing a weak spot in the colon wall to rupture.

Cleansing enemas are the closest comparison to colonic irrigations, but no systematic data have been collected on the incidence of perforation compared to the total number of enemas given. The most important risk factors for perforation relevant to colonic irrigations are advanced age and diseases of the colon such as diverticulitis and inflammatory bowel disease. The greatest risk (for those >65 with bowel disease) would be about 1 in 10,000 (based on the perforation rate for sigmoidoscopy), with the risk for younger people without bowel disease much lower.<sup>34,35</sup> Given the much smaller insertion distance into the colon, the perforation risk for colonic irrigations should be substantially less than for sigmoidoscopy.

### *Risk of other adverse effects*

Warnings against colonic irrigations often take the form of cautions about the adverse effects of substances administered during enemas. This is not relevant to colonics using only filtered tap water (which is a common application). There are no reports of adverse effects from tap water colonic irrigations in adults, although there is a concern based on the possibility of depletion of electrolytes. Collins and Mittman<sup>36</sup> have performed the only study that has specifically looked at the effect on serum electrolytes of colonic irrigations as they are given in naturopathic clinics. Although there were small changes in some electrolyte levels, the subjects ( $n = 17$ ) experienced none of the symptoms of water intoxication. The authors also note that their experience at the Portland Naturopathic Clinic has been that even in debilitated and chronically constipated patients, serious reactions to colonic hydrotherapy have not occurred.

For colonic irrigations, the risk to healthy adults of adverse effects from tap water or saline solutions is probably extremely small. It is important not to confuse the basic colonic irrigation with therapeutic procedures such as coffee enemas that may carry greater risks.

### *Transmission of pathogens*

The potential for transmission of pathogens through enemas and irrigations was described as early as 1929,<sup>37</sup> and

followed by reports by Gilbert,<sup>38</sup> Steinbach et al.,<sup>39</sup> and Meyers,<sup>40</sup> all making the point that pathogens ranging from bacteria to protozoa can survive on the parts of enema equipment that are insufficiently sterilized, and be transmitted rectally. Ever since the cases of amebiasis from improperly sterilized irrigation equipment reported by Istre et al.,<sup>32</sup> disposable parts have become standard for colonic irrigation equipment approved by the U.S. Food and Drug Administration.

## CONCLUSIONS

Clearly, the modern controversy between colon hydrotherapists and mainstream medicine has deep historic roots. Hopefully, the historical review and discussion of adverse effects provided in this paper provides basic information for informed consent that is essential for medical research to help resolve this debate.

Future basic research should seek to clarify the auto-intoxication/nerve reflex models of colon pathophysiology discussed in the historical medical literature. Clinical research focusing on common conditions such as arthritis and headache, particularly when symptoms of auto-intoxication are present, also should be a priority.

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