



Case Report

Induction of remission in moderate-to-severe steroid refractory ulcerative colitis using patient-driven non-pharmacologic therapy



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1. Introduction

The use of Complementary and Alternative Medicine (CAM) is prevalent, as high as 70%, in patients with inflammatory bowel disease (IBD) [1]. Several small studies have looked at multiple aspects of CAM, including dietary or herbal supplements, mind-body techniques and acupuncture [2]. Among the patients who utilize CAM, most report using dietary supplements [3]. The majority of randomized clinical trials (RCT) involving herbal supplements in patients with ulcerative colitis (UC) studied disease in remission or mild-to-moderate UC [4–9]. They included a small number of participants, and the results were mixed. To this date, the effectiveness of CAM in active UC remains uncertain. We present a case of moderate-to-severe UC refractory to mesalamine and steroids that reached endoscopic and clinical remission with patient-driven regimen of natural herbal supplements.

2. Case report

A 38-year-old male with a 3-year history of left-sided UC presented with weight loss, several bloody bowel movements per day and tenesmus despite oral mesalamine 1.5 g daily, mesalamine enema 4 g daily and prednisone therapy. Colonoscopy showed erythema and ulcerations extending from the rectum to the sigmoid colon consistent with moderate-to-severe UC. (Fig. 1) Infectious etiology was excluded. He had required frequent steroid therapy for 3 years without consistent improvement in symptoms. Therefore, escalation of therapy to anti-TNF agents was recommended. However, his tuberculosis (TB) screening tested positive,

and he underwent latent TB treatment with 4 months of rifampin. The plan was to initiate aTNF agent after completion of TB treatment. During this time, he sought advice from a CAM provider. He started an oral regimen of: fish oil 1.6 g twice daily, wheatgrass 2.5 g every morning, turmeric (curcumin, in capsule and marketed bioavailable form) 475 mg every morning, probiotic (bifido/lacto 50 billion) every morning, aloe vera juice 2-ounces twice daily, and filtered juice containing carrots, beets, celery, turmeric, apple and plentiful ginger. (Table 1) He later also began taking supplements containing N-acetyl D-glucosamine and blue-green algae. He purchased most of the supplements online. He was able to control his symptoms and never required corticosteroids since starting his herbal regimen.

During this period, he reported infrequent episodes of abdominal discomfort every four months that completely resolved with a short, three-day course of mesalamine enema. When he returned for UC surveillance at age 41, off routine medications for nearly 3 year, his repeat colonoscopy showed normal mucosa and had Mayo score of 0. (Fig. 2) His biopsy showed mild, inactive chronic colitis. He never initiated the escalated therapy or required corticosteroids, yet achieved clinical, endoscopic and histologic remission with herbal therapy regimen.

3. Discussion

Despite the widespread interest in dietary supplements and modifications in patients with IBD, the current guidelines provide minimal advice on their use in management [10]. However, the role of dietary antigens interacting with microbiota and mucosa of the gut has been described in pathophysiology of IBD [11], suggesting that alterations in diet, including dietary supplements, may affect disease course and treatment. Our patient achieved and maintained clinical remission from moderate-to-severe UC after following a dietary regimen that included herbal supplements,

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Table 1
Summary of the patient's dietary and herbal regimen.

Supplement	Form	Dosage	Frequency
Wheatgrass	Powder (mixed in liquid)	2.5 gm	QAM
Turmeric (Curcumin)	Capsule	475 mg	QAM
Probiotics	Capsule	50 billion live cultures	QAM
Filtered Juice (carrots, beets, celery, turmeric, apple, ginger)	Liquid	1 cup	Daily
Aloe vera gel	Liquid	2 oz	BID
Fish oil	Capsule	1.6 g	BID
Supplements with N-acetyl D-glucosamine and blue-green algae	Capsule	400 mg/259 mg	QAM

Table 2
Review of literature.

Ingredient	Study	N	Arms	Severity of UC	Induction/Maintenance	Results
Wheatgrass	Ben-Arye et al. [5]	24	100 mL wheatgrass juice +/- current treatment vs. Placebo +/- current treatment	Active UC	Induction	Follow up: 1 month Significant reductions in overall disease activity. No endoscopic improvement.
Curcumin	Hanai et al. [6]	89	Curcumin 1 g BID + SZ or mesalamine vs. Placebo + SZ or mesalamine	Inactive UC	Maintenance	Follow up: 6 months Significant clinical, endoscopic and histologic improvement.
	Singla et al. [7]	45	Curcumin enema + oral mesalamine vs. Placebo + oral mesalamine	Mild Active UC	Induction	Follow up: 2 months No significant endoscopic improvement or change in clinical remission in intention-to-treat analysis.
	Lang et al. [8]	50	Curcumin oral capsule 3 g daily + mesalamine vs. Placebo + mesalamine	Mild-to-Moderate Active UC	Induction	Follow up: 1 month Significant change in clinical and endoscopic remission.
Aloe Vera	Langmead et al. [9]	44	100 mL aloe vera gel BID + current treatment vs. Placebo + current treatment	Mild-to-Moderate Active UC	Induction	Follow up: 1 month Significant clinical improvement. No endoscopic improvement.

SZ = sulfasalazine.

without the use of mainstay pharmacotherapy. Nevertheless, most supplements utilized in his case, as with most dietary supplements, have not been well studied in large clinical trials.

Among the supplements included his regimen, fish oil, wheatgrass, aloe vera gel, probiotics and curcumin have been studied in RCTs. Omega-3 polyunsaturated fatty acids, EPA and DHA, from fish oil, are thought to have anti-inflammatory effects in the gut by decreasing arachidonic acid in membrane phospholipids and consequently reducing production of proinflammatory eicosanoids [12]. A systematic review by Cabre et al. looked at seven RCTs that included a total of 282 patients with active, mostly mild-to-moderate UC [4]. Five trials reported significant clinical, some with endoscopic and histological, improvement, while two trials

showed no steroid-sparing effect. Wheatgrass (*Triticum aestivum*) is thought to have anti-inflammatory and antioxidant properties from its components including flavonoids, chlorophyll and vitamins C and E, and was studied in a RCT (n = 24) with active, distal UC of varying severity [5]. It showed significant clinical, but not endoscopic, improvement with consumption of wheatgrass juice for one month.

Curcumin, a natural chemical in turmeric, with antioxidant and anti-inflammatory effects, has been shown to improve colitis in murine models by inhibiting nuclear factor-kB and CD4 T-cell infiltration into gut mucosa [13]. It was studied in three RCTs. Hanai et al. (n = 89) showed superiority of curcumin in maintaining remission compared to placebo in inactive UC [6]. In active mild-



Fig. 1. xxx.



Fig. 2. xxx.

to-moderate UC, Singla et al. (n=45) showed no significant endoscopic improvement with curcumin enema compared to placebo [7], while Lang et al. (n=50) demonstrated significantly higher endoscopic remission using oral curcumin with mesalamine versus placebo with mesalamine [8]. The aloe, an herbal with anti-inflammatory component by reducing myeloperoxidase, TNF- α and IL-1 β , and inhibiting leukotriene B₄, was studied in a RCT (n=44), which showed histologic improvement with oral aloe vera gel compared to placebo in mild-to-moderate UC, but without sigmoidoscopic improvement [13]. (Table 2) Ginger has non-specific anti-inflammatory properties, and was shown to improve mucosal injury in murine model with active colitis [14].

Overall, on review of literature, the evidence for the use of these supplements is limited due to small study size and heterogeneity of designs. Nevertheless, the existing literature supports that most of the herbal supplements that were studied have minimal adverse effects. Our patient achieved successful endoscopic and histologic remission from moderate-to-severe UC solely using his herbal dietary regimen without any adverse side effects. In this case, the trial of supplements such as aloe vera, curcumin or wheatgrass in active UC was successful, especially for a patient who was recommended to escalate pharmacologic therapy to anti-TNF agents, which have potential drawbacks of requiring injections and causing immunocompromised state. However, it is difficult to determine whether a particular agent or a combination of anti-inflammatory diet played a role in achieving his remission. Furthermore, we should be cautioned that all of the supplements are essentially non-regulated products, with uncertain purity and side effect profiles. With prevalent use of CAM in UC, further research is needed regarding their efficacy and safety for evidence-based guidance.

Conflict of interest

All authors have no conflict of interest to report.

Author contributions

AL participated in data acquisition and drafted the manuscript. RM drafted and participated in revision of the manuscript. MM provided critical revision and supervision of the manuscript.

Consent

Informed consent was obtained from the patient for drafting and publishing of case report.

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