Editorial

Chronic antibiotic therapy as a method of inducing remission in inflammatory bowel disease

Simcha Weissman[1], Saad Saleem[2], Michael Krzyzak[3], Muhammad Aziz[4], Stanley Yakubov[5], Yuriy Tsirlin[5], Sameet Shah[6], Ammar Hassan[6], Michael A. Sciarra[6]

[1]Department of Medicine, Hackensack University-Palisades Medical Center, North Bergan, NJ, USA; [2]Department of Medicine, Mercy St. Vincent Medical Center, Toledo, OH, USA; [3]Department of Medicine, Staten Island University Hospital, Staten Island, NY, USA; [4]Department of Medicine, University of Kansas Medical Center, Kansas City, MO, USA; [5]Department of Gastroenterology, Maimonides Medical Center, Brooklyn, NY, USA; [6]Division of Gastroenterology and Hepatology, Hackensack University-Palisades Medical Center, North Bergen, NJ, USA

Correspondence to: Simcha Weissman. Department of Medicine, Hackensack University-Palisades Medical Center, 7600 River Road, North Bergen, NJ, USA. Email: Simchaweissman@gmail.com.

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Introduction

Inflammatory bowel disease (IBD) is the general term for the chronic, relapsing, and debilitating inflammatory disorders of the gastrointestinal tract, composed primarily of Crohn's disease (CD) and Ulcerative colitis (UC). While many similarities exist, CD has a stronger predilection for the terminal ileum while UC is generally confined to the rectum and colon. Further differences exist as CD causes transmural inflammation characterized by skip lesions able to fistulize, while UC only involves the mucosa and is continuous in nature, leaving behind neutrophilic crypt abscesses. Despite the nuanced differences, DeGruttola *et al.* summarized literature proving that an imbalance of our body's flora is actually what precipitates disease (1). Given the stark difference in composition, a true imbalance is undeniable. In IBD patients, floral imbalance is then accentuated by a leaky, less resistant, epithelial barrier. Hence, inflammatory markers—with the aid of variant toll-like receptors and nucleotide-binding-oligomerisation-domains—rush fervently to the gut, causing a faster and stronger innate immune response to the host's abnormal intestinal bacteria (2). Following this logic, antibiotic therapy should be an ideal way to, at least, initially manage IBD patients. Understandingly, at first glance, the risks associated with long-term antibiotic therapy are cumbersome. Before we delve into consideration of this argument, one must realize that alternative therapy is no safe haven either. Additionally, antibiotic therapy may not be as bad as once thought to be due to newly published research in the field.

Discussion and conclusion

The adult human intestines contain trillions of bacterial cells composed of over 1000 different bacterial species. With the help of new advances in medicine we now have a better understanding of the guts natural flora. In normal intestines the most dominant groups of bacteria are *Bacteroidetes* and *Firmicutes*. In IBD patients and more particularly CD patients there is a significant decrease in these two bacteria as well as in *Faecalibacterium prausnitzii*, *Bifidobacterium adolescentis*, and *Dialister invisus*, as well as an increase in *Ruminococcus gnavus* (1). We thus clearly see a stark difference in the composition of gut bacteria in this subset of patients.

Many large studies have proven that chronic antibiotic therapy is effective for inducing remission in IBD patients. These include large spectrum studies, testing thousands of patients, given multiple types of antibiotic regimens (3-10). For various reasons, there are a lot of gastroenterologists, whom never incorporated this methodology into their practice. It is no secret that there are a number of caveats to using antibiotic treatment in a chronic nature. The development of antibiotic resistance for instance, is a hesitation, especially in the age of antibiotic over-prescription. However, the most concerning hesitation

for prescribing antibiotics for long time durations, is the eminent fear of developing *Clostridium difficile*. Non the less, a recent study by Roy *et al.* showed that this sub-set of patients should be viewed in a different light in terms of initiating chronic antibiotic therapy. They demonstrated how patients with CD in particular, are actually at a lower risk of getting *Clostridium difficile* by taking antibiotics. This is in contrast to other groups of patients; namely those whom underwent a prosthetic implant or had a valve replacement (11). Hence, while this was once a limiting factor to prescribing antibiotics, it should no longer be. In fact, following this logic, it should be encouraged.

In conclusion there is an upward trending amount of published literature regarding the benefit of prescribing antibiotics for a patient with CD or UC. Hence, gastroenterologists should become increasingly familiar with the idea of using chronic antibiotic therapy for IBD flare-ups. The consequences from the theory of dysbiosis, has proved the framework for this relatively new modality of treatment. More research must still be done as to the long-term effects of various antibiotic drug classes as well as for the long-term effects of the other immune-suppressants. While serious infectious disease related phenomenon have been reported for antibiotic usage, this subset of patients should be treated differently in terms of the general risk benefit analysis.

Acknowledgments

None.

Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

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