Successful Treatment of Refractory Clostridium Difficile Infection (CDI) with Intestinal Microbiota Transplant (IMT) in two patients with Inflammatory Bowel Disease (IBD) and its effects on IBD

Neelakanta, Anupama; Gunaratnam, Naresh Tj; Upadhyay, Nitesh; Valenstein, Paul; Moudgal, Varsha
Department of Infectious Diseases • St. Joseph Mercy Hospital, Ann Arbor, MI

Introduction
C. difficile is responsible for 15-25% of antibiotic associated diarrhea and overall incidence of C. difficile infection (CDI) is increasing in patients with inflammatory bowel disease (IBD). Incidence of CDI is doubled in Crohn’s disease and tripled in ulcerative colitis as compared to patients without IBD. There have been several studies showing worse outcomes such as greater in-hospital mortality, longer hospital stay and increased need for colectomy in patients with CDI and IBD. Among the various therapeutic modalities used for the treatment of IBD, only the use of steroids has been found to be associated with an increased risk of CDI; however the association of immunosuppressant use with CDI is controversial and the use of biologics has not been shown to have a clear association with development of CDI.

Pathophysiology
The human microbiota is a complex ecosystem, which contains between 10^13 and 10^16 microorganisms, the predominant phyla being Bacteroidetes and Firmicutes. The current view is that individual species may play a key role in the persistence of IBD. The intestinal microbiota is responsible for 15-25% of antibiotic associated diarrhea and overall incidence of CDI in IBD. Alteration of this microbiota has been implicated in the pathogenesis of a variety of infectious, inflammatory, allergic and immunologic conditions including IBD. The current view is that individual species may play a key role in the persistence of inflammatory responses in chronic disease.

Methods
At St. Joseph Mercy Hospital we have used Intestinal Microbiota Transplant (IMT) for the treatment of recurrent CDI and CDI associated diarrhea in IBD patients who have failed multiple therapeutic modalities and have failed to respond to standard treatment. In our experience with the 2 patients with concomitant CDI and IBD, IMT showed resolution of CDI in 100% of the cases after failure of medical therapy, since 2009. We have performed the procedure on eleven patients so far with a 100% success rate. Among the patients who have undergone IMT, two patients had concurrent CDI and IBD. The donor is a friend or family member of the patient with no allergies or known problems. She has been clinically remission from the standpoint of both CDI and IBD with 1-2 formed, non-bloody bowel movements per day for over one year and has since regained her weight.

Discussion
Several studies have demonstrated that IMT is a safe and effective method for the treatment of recurrent CDI. The first use of IMT dates back to 1958 when Eiseman et al. described the use of IMT in 4 patients with a variety of gastrointestinal diseases and reported improvement of the primary condition in 2 patients. Subsequently in 2003 the same author published a case series of 6 patients with IBD where IMT used as a primary therapeutic modality was found to be curative. In our experience with the 2 patients concomitant CDI and IBD, IMT showed resolution of CDI but no change in IBD with up to 1 year of follow up. It is unclear if the difference in results between Dr. Boreddy’s patients and ours are related to duration of IBD before IMT, route of administration of donor stool, number of times stool was transplanted etc.

IMT should be considered as a treatment option for refractory recurrent CDI in patients with concomitant IBD since it provides an option to minimal therapy for IBD. Further studies are needed to assess the role of IMT as an independent therapeutic option for IBD.

References