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Opinion Article

Fecal Microbiota Transplantation and its Protocol: A New Approach

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DESCRIPTION

Fecal Microbiota Transplantation (FMT) is defined as the administration of a solution of fecal matter from a healthy donor into the intestinal tract of a recipient in order to directly change the recipients gut microbial composition and confer a health benefit. Composition of human gut microbiota varies according to the gender, age, diet and location along the gastrointestinal tract. These gut microbiota enhances the metabolism, immune system, cancer resistance, endocrine signaling, brain function. Some of the gut microbiota are bacteroides, *Bifidobacterium*, *Clostridium* clusters, *Lactobacillus*, etc.

FMT can occur in conditions other than *Clostridium difficile* Infection (CDI) such as inflammatory bowel disease, irritable bowel syndrome, obesity, metabolic syndrome, type 2 diabetes, fatty liver disease and hepatic encephalopathy.

Pathophysiology

Clostridium difficile (C.*difficile*) is the most important and common nosocomial pathogen of healthcare associated diarrhea in hospitalized patients. It spreads through feco-oral route. It is ingested either as vegetative form or as spores. Spore germinate into vegetative form in small intestine. Pathogenesis is linked to spore germination and production of toxins. Pathogenesis of CDI depends on dormant spore morphotype.

C. difficile Associated Disease (CDAD) covers a broad spectrum of patient conditions, ranging from mild diarrhea to life threatening complications such as ileal perforation, fulminant colitis, toxic megacolon or brain empyema. It produces enterotoxin (toxin A), cytotoxin (toxin B) and binary toxin.

It is the major cause of intestinal infection and diarrhea following antibiotic treatment. Spores of *C. difficile* survive for long periods on inanimate objects resisting heat and acid.

Transplantation of fecal microbiota

No standard methodology is present for FMT.

Universal donor screening: Detailed patient history and physical examination should be done. Test should be negative for infections and rescreened for every 4 months. Potential donors should be screened for behaviors. Donor should be free of diseases. Donors should undergo serological and stool testing to screen for infectious agent. Preferably within 4 weeks of donation.

Stool transplantation protocol: Before the procedure, stool transplant recipient was pre-treated with a 4-day course of oral vancomycin to reduce the *C. difficile* load. This treatment was stopped in evening before transplantation. In the morning of transplantation, patient will receive 20 mg of omeprazole. In the morning of the procedure, a nasogastric tube was placed in the patients' stomach and the tip placement position was confirmed by abdominal radiography.

- Take 30 mg of sample and 50-70 ml of 0.09% N saline and blend for 3-4 minutes and filter it by paper coffee filter.
- 25 ml of the transplant stool suspension was taken up into a syringe and instilled into the stomach through nasogastric tube.
- The nasogastric tube was then flushed with 25 ml of sterile 0.9 N saline and removed.
- Patient is allowed to resume a normal diet immediately.
- During the weeks after the transplantation, stool specimens were examined for the presence of toxin A in patient.

Some patients have developed diarrhea, 17 days after undergoing stool transplantation and the results of an additional *C. difficile* stool toxin test was positive. Patient was treated with a 10-day course of orally administered vancomycin and the diarrhea was resolved within 4 days. The patients did not have any further episodes of diarrhea and the stool *C. difficile* toxin test yielded a negative result after 6 months.

Some patients had not experienced any recurrence of diarrhea after the stool transplantation and remained free-of diarrhea during the 90-day follow-up period. Recurrent CDAD can be treated with this in a safe and efficient manner. Patients with refractory recurrent CDAD undergo fecal transplantation through a nasogastric tube. This therapy may offer standard antibiotic treatment regimens to an efficient, low-risk, and affordable substitute for patients and physicians.

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