



Fecal microbiota transplantation is not a magical treatment, but better too early than too late

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Fecal microbiome transplantation (FMT) is a recently emerged form of microbiome-based therapy aimed at correcting the recipient's unhealthy gut microbiome, such as due to dysbiosis associated with disease, by transplanting a donor's healthy intestinal microbiome. FMT was recognized in 2013 as an effective and safe treatment for *Clostridioides difficile* infection (CDI) [1] and has since become a routine therapy for recurrent CDI (rCDI) [2]. Evidence of the efficacy of FMT for indications other than CDI is growing, but data are still limited. In Korea, FMT was approved as a new health technology in 2016 and has been effectively used for the treatment of rCDI. FMT for non-CDI diseases is also being tested. However, the clinical experience of Korean physicians with FMT, including its administration and indications, has been limited.

Gweon et al. [3] conducted a survey from May 2019 to October 2019 to evaluate the perception of FMT among gastroenterologists in Korea. The 107 gastroenterologists answered approximately 20 questions divided into six sections. The survey included information on the awareness of FMT safety, FMT-related clinical activities, and stool bank organization. The goal was to help identify current perceptions and attitudes toward FMT. Among the tertiary hospital physicians,

only 61.7% had experience with FMT. Furthermore, while FMT has been shown to provide a rapid resolution of CDI, with a lower recurrence rate compared with conventional treatment [4], only 80.4% of physicians were willing to use FMT for the treatment of rCDI. A similar trend was found in other parts of the world. Baunwall et al. [5] reported that only 10% of rCDIs in Europe were treated with FMT. The significant underuse of FMT for rCDI indicates the need to raise clinical awareness, both in Korea and Europe, of FMT as a recommended treatment for rCDI.

More than half of the surveyed physicians (64.4%) recognized that FMT is safe, but 15.9% stated that FMT is a very dangerous (2.8%) or dangerous (13.1%) procedure. The perception of FMT as unsafe can be explained as follows. First, in 2019, one death due to infection of a drug-resistant organism via FMT occurred [6]. Second, the safety of FMT cannot be guaranteed in the absence of guidelines. In fact, among the respondents, the greatest obstacle to the use of FMT was the lack of regulations or guidelines. As the efficacy of FMT is globally recognized, the many centers implementing FMT do so according to high safety standards and in compliance with international consensus guidelines as well as official and informal regulations. In Korea, a clinical practice guideline for FMT was published recently [7] that includes strict standards regarding donor screening but also stool

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preparation, storage, and handling. These measures have fewer additional serious adverse events associated with FMT and have improved its safety. However, the guideline is not compulsory, and there are wide variations in the donor screening, stool preparation, and transplant procedures [5]. Regulations for standardized FMT production processes and transplantation methods are therefore needed.

FMT is also used experimentally, to determine the causal relationship between the gut microbiome and diseases other than CDI [8]. SER-109, an investigational microbiome therapeutic composed of purified *Firmicutes* spores, reduced the rate of rCDI by week 8 [9]. SER-109 was initially developed in a "proof of concept" study of FMT aimed at supplementing key gut microorganisms. Other studies have examined the ability of the microbiome composition to predict recurrence [10]. Disease treatment using the microbiome has enormous potential, and critical insights into candidate treatments can be obtained through FMT. This approach will likely identify not only live microorganisms but also their active components. However, for this strategy to become a reality, the value of FMT for treating CDI and non-CDI should be standardized and further research on FMT conducted.

The limitations of this study are as follows. First, only hospital-based gastroenterologists were targeted by the survey, and while > 100 responses were analyzed, the response rate was low (11.7%). Thus, it may be that Korea's FMT activities were overrepresented by the survey results, as the doctors most likely to have responded belonged to academic centers and are interested in FMT. Additionally, the survey results reflected the conditions in 2019, and current practices and FMT activities may differ.

Gweon et al. [3] provided a clear basis for assessing the use of FMT in Korea and pointed out its potential. Nonetheless, there are still many physicians reluctant to adopt FMT, and additional studies demonstrating the benefits of FMT are needed in Korea. However, it should also be noted that while FMT is often effective, it is not magical. Given the growing interest in FMT, research into its clinical benefits should be actively pursued.

Conflict of interest

No potential conflict of interest relevant to this article was reported.

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