REUTERS

Scientists fight bugs with poo

Kate Kelland, Health, Science Correspondent8 Min Read
7-9 minutes

LONDON (Reuters) - Once a year, every year, Professor Thomas Borody receives a single-stem rose from one of his most grateful patients. She is, he says, thanking him for restoring her bowel flora.

It's a distasteful cure for a problem that's increasingly widespread: the Clostridium difficile bug, typically caught by patients in hospitals and nursing homes, can be hard to treat with antibiotics. But Borody is one of a group of scientists who believe the answer is a faecal transplant.

Some jokily call it a "transpoosion." Others have more sciencey names like "bacteriotherapy" or "stool infusion therapy." But the process involves, frankly, replacing a person's poo with someone else's, and in the process, giving them back the "good" bugs they desperately need.

Borody's grateful patient, Coralie Muddell, suffered months of chronic diarrhoea so bad she would often embarrass herself in public, and had even stopped eating to try to halt the flow.

The technique that cured her has had a success rate of around 90 percent in the experimental cases where it has been used so far. Now scientists are taking it to the next level, with randomized controlled trials to establish if it can really be a viable option when antibiotics have failed.

With rates of hospital-acquired C.difficile infection rising in the United States, Europe and other parts of the world, that could save lives as well as reducing expensive days of extra care. "There's rising recognition of how effective this is," Borody, a Sydney-based gastroenterologist, told Reuters.

YUCK FACTOR

There's little doubt this treatment has an image problem. Feces, including important bowel flora, is transferred from a volunteer donor -- screened to limit possible other infections -- into the colon of the infected patient. The treatment can be administered by a colonoscope or an enema, or by the mouth or the nose.

"I used to be frowned upon and called 'the doctor who makes people eat shit'," says Borody, whose scientific papers have included such titles as "Flora Power" and "Toying with Human Motions." But he is also deadly serious. One of his published studies reported that in patients with recurrent C.difficile infection, 60 out of 67 -- 90 percent -- of those who received faecal transplants were cured.

Alex Khoruts, a gastroenterologist at the University of Minnesota Medical School in the United States, agrees that the science is not to be sniffed at. "The data are very strong," he said in a telephone interview. "There is no question that it works."

Khoruts published a study in the Journal of Clinical Gastroenterology in 2009 that showed a single infusion of feces reversed the absence of bacteroides -- a group of bacteria vital to the body's ability to withstand infections with C.difficile.

Khoruts often sees patients who have taken course after course of antibiotics. As soon as the treatment stops, the infection returns. It doesn't take much for these sufferers to listen to a new treatment idea, even if it involves feces.

"The patients I see don't have any qualms about it," he says. "By the time I see them, they've often been sick for anywhere from six months to two years, so they're quite desperate. Nothing really scares them."

The main aim, he says, is to keep the poo pure.

"What we try to do is preserve it as close as possible to how it was in the donor. There's no in-between culture or enrichment. We want to transfer as much as we can intact."

The donor feces is filtered to remove some larger particles and then "simply goes through a blender," says Khoruts, with a saline solution to liquefy it before it is administered.

He favors methods which avoid going in through the mouth or the nose, which he says may make patients gag.

Borody's clinic, at the Center for Digestive Diseases in New South Wales, acknowledges that using a nasojejunal tube -- which goes in through the nose, down the throat and into the stomach -- is not the most attractive method, but argues it is the most reliable way of killing the C.difficile bug and its spores once and for all.

C. DIFFICILE ON THE RISE

Repellent as faecal transplants may seem, if C.difficile trends continue, demand could rise rapidly.

A Europe-wide study published in The Lancet late last year found the incidence of C.difficile infections in hospitals in the region had risen to 4.1 per 10,000 patient days in 2008 from 2.45 per 10,000 patient days in 2005.

The infections can have a range of consequences, from severe diarrhoea to blood poisoning, colitis and death.

A 2008 report from the Association for Professionals in Infection Control and Epidemiology (APIC) found that on any single day in U.S. hospitals, there could be 7,000 infections with C.difficile and up to 300 deaths.

The most commonly used antibiotic for C.difficile is metronidazole, and some more severe forms are treated with vancomycin, traditionally seen as the antibiotic of last resort. Like other bacteria, C.difficile can develop resistance to vancomycin, giving it "superbug" or multi-drug-resistant traits that make treatment extremely difficult or impossible.

Khoruts cites data from 1958, when some of the first scientific papers on the use of faecal transplants were published. That showed the death rate for patients with a type of infection called fulminant C.difficile colitis was 75 percent.

"Then if you go forward to 2010 -- 52 years later, with the best current medical care and new antibiotics -- the mortality is still 50 percent," he says. "So we really can't say standard medicine has done that well in 50 years."

"POO IS THE ONLY ANSWER"

Khoruts now fears that unless the medical establishment embraces the technique, “the majority of people who could benefit from this procedure are not going to get it.” Borody says “poo is the only answer.” So why is it not catching on?

Scientific literature over half a century has documented the use of faecal transplants, but the technique has remained on the fringes of medicine. Some experts say a lack of robust trial data may be holding people back -- as well as the obvious and natural aversion to feces as a medicinal product.

To try to address this, a team of specialists in The Netherlands is recruiting around 100 sick and healthy people into a randomized controlled trial -- considered the gold standard in science -- to see if the method can be proven.

Although the study is still under way, Ed Kuijper of the Leiden University Medical Center, one of those working on it, says the early signs are that faecal transplants will be shown to be effective in patients with recurrent, or relapsing C.difficile infections.

Tackling the image problem is more challenging; but both Khoruts and Kuijper say scientists are “not very far away” from being able develop a kind of artificial feces that might help.

This laboratory-grown poo would be like a super pro-biotic, they say, but more powerful by far than any yoghurt drink you can buy in a supermarket. It would have the qualities of donor poo without the marketing issues.

“It would be a good idea if synthetic poo would work,” says Borody. But he has doubts -- and until he sees some good results with artificial feces, he’s sticking with the real thing. “We’d like to get away from poo, but it works the best.”

Editing by Sara Ledwith