

Diarrhoea and Intestinal Microbiota

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Abstract

We carry out a review of the world literature, regarding the role played by the Intestinal Microbiota (IM), -when transplanted- in the decrease and disappearance of diarrhoea, in many conditions. Some acute and most chronic.

Also, we show our little experience regarding the effect of Intestinal Microbiota Transplant (IMT), also known as Fecal Microbiota Transplant (FMT).

We refer how patients with Irritable Bowel Syndrome, Diarrhoea variety, Anxiety, Systemic Lupus Erythematosus, Pseudomembranous Colitis, Intestinal Malabsorption Syndrome, Amyotrophic Lateral Sclerosis and Retroperitoneal Cancer operated on 4 occasions, secondary to left seminoma and right testicular teratoma (excised).

We show that in all of them, the diarrhoea was reduced substantially and that the complications that appeared were minimal; without relevance or significant effect.

Key Words: chronic diarrhoea; fecal microbiota transplantation (FMT); intestinal microbiota transplantation (IMT); Intestinal microbiota (IM)

Introduction:

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Findings. We analyze 17 cases with 33 to 86 years of age. 9 male and 8 female. The main diagnosis appears in the next table.

Main Diagnostic	
Anxiety.	7 cases
Ibs, variety diarrhoea	4 cases
Retroperitoneal cancer operated in 4 Occasions, secondary to seminoma Left and right teratoma	4 cases
Amyotrophic lateral sclerosis Active systemic lupus erythematosus Bad absorption syndrome Pseudomembranous enterocolitis Chronic alcoholism	2 cases
Total	17 Cases

Table 1: The evolution time of the stools appears in the next Table.

5 Days	1 patient
1 Month	1 patient
2 Months	3 patients (alternate days)
3 Months	4 patients (alternate days)
5 Months	1 patient (alternate days)
6 Months	2 patients (alternate days)
12 Months	1 patient (alternate days)
24 Months	1 patient (alternate days)
15 Months	1 patient (alternate days)
3 Years	1 patient (alternate days)
5 Years	1 patient (alternate days)
Total	17 Cases

Table 2: Time of Evolution of Depositions

Number of Depositions, Daily. They happened in number from 2, to 8, in 24 hours. The number of evacuations that was presented the most was 6 a day. Some of the evacuations were on alternate days. In 3 cases there were bloody stools and these occurred in a patient with

pseudomembranous enterocolitis, in a patient with rectal polyps and in rectal vascular ectasia.

In addition, other secondary comorbidities appeared, such as the following table (Evolutions is included).

1.	Anxiety. 7 cases (Separate comment)
2.	Obesity. 6 cases (3 patients started losing weight)
3.	IBS, diarrhoea variety. 6 cases (Separate comment)
4.	Diverticular disease of the colon. 5 cases (Pending long-term evaluation)
5.	Arterial hypertension. 5 cases (Without improvement)
6.	Hiatal hernia. 4 cases (3 patients improved completely)
7.	Diabetes mellitus type 2, stable adult. 3 cases (Without improvement)
8.	Benign prostatic hypertrophy. 3 cases (Without improvement)
9.	Neuropathies. 3 cases (He improved the pain)
10.	Dyslipidemia. 3 cases (Pending long-term evaluation)
11.	Lactose intolerance. 2 cases (They improved in 10 days)
12.	Dermatopathy. 2 cases (They were completely corrected before two 14 weeks)
13.	Spastic colon. 2 cases (They were totally corrected, in 8 days)
14	Peripheral vascular insufficiency in podic members. 2 cases (Without 17improvement)
15	Allergy to cold. 2 cases (They gave in 1 week)
16	Disc degeneration and listesis grade I-II (L-2) (Decreased pain, at 10 18days)
17	Malnutrition. (Corrected in 4 months)
18	COPD. (Without improvement)
19	Fibromyalgia. (It improved completely a week).
20	Lupus glomerulonephritis. (Biopsy was required to Evaluate the case)
21	Non-alcoholic fatty liver. (In Ultrasound control under 1 to 0).
22	Uterine myomatosis. (Without improvement)
23	Facial neuralgia on the left side. (It improved completely in 10 days)
24	Weightloss. (At 48 hours he no longer lost weight)
25	Insufficient weight. (He gained 4 Pounds in 10 days).
26	Bilateral pterygium, predominantly left. (Without improvement)
27	Neurocardiogenic syndrome. (Without improvement)
28	Smoking. (Without improvement)
29	Vulvovaginitis. (Decreased, by 8 days)

Table 3: Secondary Comorbidities

Type of Transplant. He was colonic in 13 cases, Jejunal in 3 and mixed (jejunal and colonic in 3). The patient with pseudomembranous enterocolitis required 3 transplants.

The Findings of the Endoscopic Studies Were:

1	Colon diverticular disease. Three cases.
2	Gastritis. One case
3	gastric polyp. One case (remove)
4	rectorragy for rectal vascular ectasia (spontaneously yielded)
5	rectorragy for rectal polyps. (yielded)

Table 4: Endoscopic Findings

The Amount of Transplanted Microbiota was 200 ml. In ascending colon, 100 ml. In transverse colon and 200 ml. In descending colon in 10 patients. In the patient with pseudomembranous Colitis, 3 transplants were performed, for the same amount, on alternate days.

In 2 cases 250 ml were instilled into the jejunum. And then in ascending colon 200 ml. 100 ml. In transverse colon and 200 ml. In the descending colon. In 1 case: 250 ml. In the jejunum And then: 100 ml. In ascending colon, 50 ml. In transverse colon and 100 ml. In descending colon.

We applied the Microbiota in 3 cases, through the jejunum, depositing 250 ml in one case. And in another 400 ml.

Complications. They were presented in 4 cases. One of them diarrhoea in number of 8 a day and abdominal pain. They ceded at 24 hours spontaneously. The second with diarrhoea and abdominal pain, which yielded with antispasmodics and probiotics at 48 hours. The third with bloating and pain on both flanks, which disappeared at 24 hours. The fourth case presented with diarrhoea, from overeating chile, mole and tamarind. Containing the problem with antispasmodics, probiotics and anti-diarrheals. We consider that this case was not a complication of the IMT, but of the excess when eating, despite having been told otherwise. The problem gave way in 3 days.

Although comments have already been made on some comorbidities, the time and percentages of the improvements appear below. Which occurred in all cases.

In the Main Diagnosis, the Evolution Was: Anxiety 13 Cases. (Decreased from the 4th Day to 3 weeks, in all cases, considering the Hamilton Scale).

The patient with the greatest anxiety had 40 points, and the one with the least anxiety 16. In the comparative lines, the initial anxiety and below the anxiety after the IMT are observed:

Initial Anxiety: 20, 40, 37, 24, 21, 22, 33, 22, 32, 16, 19, 30, 22.

Anxiety with IMT: 10, 04, 06, 09, 12, 13, 08, 09, 16, 04, 05, 14, 08.

Case number 9 was the survey conducted in its first phase to the son of the lady, because she is unconscious.

The 13 patients with IBS, Variety diarrhoea, as initial diagnosis, as well as the 4 patients with the same Syndrome detected as secondary comorbidity, no longer had liquid stools, at 2 weeks after the IMT.

The 2 patients with lactose intolerance and the patient with retroperitoneal cancer operated on 4 occasions, secondary to left seminoma and right teratoma (extirpated) tolerate all foods and beverages, including mole, chile, guacamole and beer. Patients with IBS, variety diarrhoea, comment that their stools are formed. (In The long-term cases, he say that for years did not evacuate formed and solid)

Literature Review.

One of the conditions that are most often treated with IMT is diarrhoea. All over the world, the criteria tend to be standardized and the methodology to equalize, in order to obtain better answers [1, 2, 3].

According to the World Health Organization Diarrhoea is the passage of 3 or more loose or liquid stools per day, or more frequently than is normal for the individual [4].

Although in our casuistry we do not address patients with diarrhoea, such as those caused by bacteria, parasites or contaminated water, but those that occur in processes resulting from mainly gastrointestinal conditions, predominantly Irritable Bowel Syndrome, secondary to alterations in the intestinal microbiota (IM).

Diarrhoea, caused by IBS, inflammatory processes (IBD, Crohn's disease, immunological disorders, and others), are frequent and can be seen to affect the quality of life and good personal development [5, 6, 7].

The referenced authors have witnessed the importance of Intestinal Microbiota Transplantation in diseases as frequent as IBS, diarrhoea variety [8], and the inflammatory processes of Ulcerative Colitis and Crohn's Disease, with generation of diarrheic evacuations [9, 10, 11, 12], as well as the correction, with an enormous frequency of inflammatory processes and consequently diarrhoea [13, 14].

Remission of diarrheal processes has been frequently observed in other diagnoses, such as Lupus erythematosus [15].

The most abundant cases in the world literature are *C. difficile* diarrhoea, which we include only one case; our casuistry included 17 patients.

Various information reveals that Fecal Microbiota Transplantation treats them satisfactorily from 80 to 90% [16]. We do not include *C. difficile* recurrent diarrhoea [17, 18, 19]. For having been successfully addressed.

Now, regarding our cases, we consider that one of the reasons for the decrease in diarrhoea was the tireless search for excellent donors, to whom we not only performed a deep medical history [20], but also carried out the studies required [21]. And above all, we use the criterion of having donors under the age of 30 years [22].

At present, it is necessary not forget the recommendations of the U. S. FDA [23], which indicate that from March 23, 2020 we must carry out:

- Questions aimed at identifying donors who may be infected with SARS-CoV-2.
- Donor and / or donor stool test for SARS-CoV-2.
- Development of criteria for the exclusion of donors and donor feces based on detection and tests.

• Informed consent that includes information on the potential for transmission of SARS-CoV-2 through FMT, including FMT prepared from donor faeces that are asymptomatic for COVID-19.

These statements are reinforced by the FDA on April 9, 2020 [24].

We add that those samples processed before November 1, 2019, may be useful, if the processing was based on all the rules inherent to Fecal Microbiota Transplantation [25].

Comments.

In our casuistry we observed that the majority of patients with chronic diarrhoea had anxiety, as the first diagnosis, followed by IBS, diarrhoea variety. And in all of them there were good results. We note that both primary and secondary comorbidities improved in most patients. Most of the transplants performed were performed in the colon, with amounts around 500 ml. Of microbiota.

We have started to administer IMT in cancer, with surprising results. We tried that the patient was in a remission phase and the fact that the fall of the weight stops, as well as recover the appetite, especially of foods that he liked, for us was a truly favorable surprise.

The comments made by some patients with chronic diarrhoea, which included that they did not evacuate solid or formed for months, also surprised us, as well as the recovery of weight and the decrease of intestinal disorders added.

Something that we cannot forget in the Fecal Microbiota Transplant methodology is Dysbiosis, a process that is present in all cases and whether it is called dysbiosis, intestinal dysbiosis or dysbacteriosis [26], and that occurs when the normal balance is altered of the normal flow of the microbiota, generates specific symptoms and has prevention, which we can try [27]. This inflammatory process is the result of an inadequate diet, the use of antibiotics, exaggerated intake of alcohol, stress or certain drugs. It can be reversed, or at the hands try with changes in habits [28, 29].

Conclusions

• Mixed Intestinal Microbiota Transplant (jejunum and colon, gives better results).

• The increase of the amount of 500 ml. It helps to improve the morbid processes, more quickly.

• Complications are usually benign and correct alone or with conventional treatment.

• We believe that it is time to gradually add more conditions to the list of cases

treatable with IMT.

• The IMT should be added to the therapeutic guidelines. In the world.

Given the presence of COVID-19, the U. S. FDA recommends only using microbiota made before November 1, 2019, and searching for donors for SARS-CoV-2 [30, 31].

Conflicts of interest: The authors declare that they do NOT have affiliation or participation in organizations with financial interests.

Ethical approval: The present report does not contain any study with human or animal subjects made by the authors.

Informed consent: The authors obtained written informed consent from the patient in order to develop this report.

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