

Intestinal Microbiota Transplantation in Old Age

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Abstract

Mini-review is carried out, about the relationship between the Intestinal Microbiota, with its transplant and old age. Likewise, there are two cases, studied by us, in whom they had undergone Intestinal Microbiota Transplantation (IMT), motivated by Irritable Bowel Syndrome (IBS), of long evolution and impact and one more, in which *C. difficile*, forced the IMT. All of them presented aggregate clinical manifestations, which surprised us, by decreasing substantially, as did the primary manifestations.

The review of emerging concepts is deepened, between Intestinal Microbiota, its Transplant and Old Age, as well as the importance of the intestine-microbiota-brain axis, as a modulating agent of inflammatory processes. Finally, some conclusions are proposed, which suggest deepening these exciting topics.

Keywords: *Microbiome; Intestinal Microbiota-Brain Axis (GMB); Intestinal Microbiota Transplant (IMT); Old Age*

Introduction

What has motivated us to review and publish what concerns the relationship between the Intestinal Microbiota Transplant (IMT) and old age, is the search for every human being, to eternalize on this sick planet.

The terms change with the times. We believe that old age should not be identified, with older people, since each time the human being lives longer and, these pejorative terms, negatively affect the legitimate desire, which any person possesses, of wanting to live longer and, above all with good quality.

The changes that occur in aging are multiple and, are located in numerous organs, especially in the intestine. From which two-way signals emanate towards the brain and manifest as diverse inflammatory processes. To this inflammation (dysbiosis), the alterations are attributed, so it is logical to consider, that if the administration of young microbiota, generates positive reaction in adults, why the same would not happen, in the elderly. We have tried to explain the above, analyzing what happens in rats and it is observed that there is a decrease in inflammation, when administering young microbiota to aged rats [1]. In 3 patients over 80 years old, in whom we aimed to restore other conditions we observed the inflammatory process subsided, by improving the anxiety they presented, as a secondary diagnosis.

IMT results

- Abdominal pain: (In one case it disappeared, in another it decreased 50%)
- Changes in bowel habits: (In one it decreased 75% and in another 60%)
- Diarrhea: (In one case it decreased from 6 to 3 and in the other from 6 to 2)
- Pseudomembranous Enterocolitis: Improved 100%, to the 3rd. Transplant.

He drew attention that as a secondary condition, the 3 patients presented anxiety of different degrees, according to the Hamilton scale (Hamilton M. The assessment of anxiety states by rating. *Br J Med Psychol.* 1959; 32: 50-55).

Anxiety, pre and post transplant

- Case 1: Male. 83 years Anxiety pre 26 points. Post 13 points.
- Case 2: Male. 83 years Anxiety pre 20 points. Post 10 points.
- Case 3: Female. 82 years Anxiety pre 3 points. Post 16 points.

The same has been observed in elderly mice, in which the proportion of *Firmicutes* and *Bacteroidetes*, two main bacterial edges in the Intestinal Microbiota, increase [2].

Articles that speak about the role of the Intestinal Microbiota in aging begin to appear and consider their importance in anti-aging medicine [3,4].

An interesting observation is that made by Bárcena C and his group, who determine that centennial humans have a substantial increase in *Verrucomicrobia*, with a reduction in *Proteobacteria*. Noting that the fecal microbiota transplant of wild-type mice improved life in mouse models and the *Akkermansia muciniphila verrucomicrobia* transplant was sufficient to exert beneficial effects [5].

It has been shown that the most significant changes in the composition of the Human Microbiota occur in childhood and in old age. In excellent article Nagpal R., *et al.* Express concepts that are already known, such as the importance of sequencing and metagenomic tools, and their use to help age with more quality. They conclude the importance of IMT, pre, pro and symbiotics, as well as nutraceuticals and functional foods, as elements to improve life, in the elderly [6].

The alteration of intestinal motility in the elderly patient had already been considered. Now we see that this occurs, because the macrophages resident in the muscularis, have bidirectional communication with the Intestinal Microbiota and, in this lie the motility alterations, which are observed in the elderly patient [7].

The Intestinal Microbiota of the elderly becomes diverse and variable, as the age progresses. It has been determined that the biological age is related to its composition. That is, when the biological age increases, a decrease in wealth is observed in the Intestinal Microbiota. In short, chronological age and biological age are different [8].

Therefore, the emerging concept of a gut-microbiota-brain axis indicates that modulation of the gut microbiota can be a manageable strategy to develop new therapies for complex disorders of the Central Nervous System (CNS) [9].

Interesting are the conclusions of Li N and his group, pointing out - even in rats - the effects of Intestinal Microbiota Transplantation on them. In those mice, subjected to depression and chronic stress, with added anxiety, less relative abundance of *Lactobacillus* and greater *Akkermansia* is detected. With this, and the impact on the hippocampus, due to the inflammatory process of the GMB axis, suggest that this generates the manifestation of anxiety and depression in the mice. The foregoing indicates the link between anxiety and brain function [10].

Conclusion

- In more than half of the cases the modulation of the Intestinal Microbiota is positive, especially when the interventions are non-probiotic [11].

- Dysbiosis (Dysbacteriosis) of the Intestinal Microbiota is related in various mental conditions [12].
- Sarcopenia that translates dysbiosis of the Microbiota, improves with probiotics. Would you improve with IMT? [13]
- The return to normobiosis by (IMT) is promising therapy, although the mechanisms underlying its efficacy are currently unknown. IMT decreases colonic inflammation and begins the restoration of intestinal homeostasis [14].

Conflicts of Interest

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

Ethical Approval

This report does not contain any study with human or animal subjects carried out by the authors.

Informed Consent

The authors obtained informed written consent from the patient, in order to develop this article.

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