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Mini Review

What is Dysbiosis and, in which Parts of the Organism Exists?

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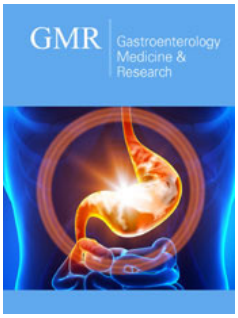

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Abstract

A thorough review of how microbial dysbiosis of different regions impacts on health. The dysbiosis of the Intestinal Microbiota stands out, since it is the one that occupies the highest percentage and, where the greatest number of investigations have been carried out. The different axes that have sprung from the studies are determined, highlighting the brain-gut microbiota axis. The various bi-directional communications between the microbiota and the different organs are analyzed and as this communication is significant in the loss of health.

Keywords: Dysbiosis; Dysbacteriosis; Gut-microbiota-brain axis (GMB); Intestinal Microbiota Transplantation (IMT); Intestinal Microbiota (IM)

Comments

Dysbiosis (dysbacteriosis). "Microbiota imbalance that can be caused by various etiologies or mismatch thereof, which results in multiple alterations and, consequently in diseases." This imbalance produces inflammation in various organs and systems, such as the liver [1], the intestine; by causing Inflammatory Bowel Disease [2], the stomach [3], other autoimmune processes or tumor conditions [4]. The skin is not exempt [5], through communication with the Microbiota, through the Intestine-Skin Axis. As well as the neuro-psychiatric problems, mediated by the Intestine-Microbiota-Brain Axis [6]. Now, how can it be done so that the Intestinal Microbiota does not reach dysbiosis? [7] First of all, we must try to preserve its homeostasis; that is, try to maintain those favorable microorganisms, through healthy diets [8], strict control of the use of antibiotics [9] and bacterial intervention [10]. The use of probiotics has been discussed in the search for homeostasis maintenance, some authors [11] point out that they can restore MI; Lactobacillus being the most indicated. Other authors [12,13] include, in addition to Lactobacillus spp., Bifidobacterium spp., And Saccharomyces spp. In addition to the use of symbiotics. In what regions of the body are there dysbiosis. The answer is that in anyone, since the microbiota is present in practically the whole organism, although in smaller quantity, but with the same functions as the digestive one. IM is one of the most studied subjects, especially that which occurs due to the infection of Clostridium difficile. Topic that is not even under discussion, since Microbiota Transplantation is highly effective in these processes. Irritable Bowel Syndrome (IBS) and other functional digestive disorders follow. Inflammatory Bowel Disease, preferably nonspecific chronic Ulcerative Colitis (UC), and different diarrhea [14-17].

Dysbiosis in Oncology. Many Oncologists have turned their eyes to oncological processes and their relationship with dysbiosis. Among the most studied and improved cancers with IM, there are those of the colon, gastric and gallbladder [18]. Dysbiosis of the skin. More often we will hear about the different axes that make up the relationship between the Microbiome and parallel systems, such as the Intestine-Microbiota-Brain axis, the intestine-skin axis, the intestine-lung axis, etc. [19] These axes, where bidirectional communication is so effective

and, in the case of the skin, carry signals that involve the most extensive organ of the human body and, we see conditions such as Atopic Dermatitis appear [20]. Alterations of the skin microbiota have been observed in Psoriasis, [21] including Vitiligo, that is, dysbiosis is present [22]. The aforementioned processes, although they improve with Intestinal Microbiota Transplantation, are not fully resolved. Could a skin-skin transplant be required? But what happens with acne? a condition so widespread throughout the world. It has been observed that the Intestinal Microbiota is different and it produces dysbiosis as a cause of the disease [23]. Finally, another frequent condition such as Eczema, has been widely discussed and at the moment the comments focus on the language used [24]. Dysbiosis in ears, nose and throat. This region is not exempt from the link between the Microbiota in the area [25] and the diseases, especially chronic diseases that occur in it, through intestinal dysbiosis and the indicated region [26].

Dysbiosis in the airway. What's new about it? Dysbiosis of the intestinal microbiota has been implicated in conditions such as asthma, allergies and cystic fibrosis [27]. It has also been linked to changes in the immune response and the occurrence of lung diseases. So, the use of the Intestinal Microbiota in Lung Diseases is hopeful [28]. Dysbiosis in Neuropsychiatry. Although in the neuropsychiatric processes the dysbiosis of the Intestinal microbiota has been taken as a basis, also the microbiota regulated by the intestine-microbiota-brain axis, is of fundamental importance [29]. Numerous are the conditions that occur due to this inflammation such as Autism [30], Major Depression [31], Alzheimer's [32], Multiple Sclerosis [33], Chronic Fatigue Syndrome [34], Anxiety [35], etc.

Dysbiosis in endocrinological processes. What is there about it?

Several articles highlight the relationship between Type 1 Diabetes Mellitus and dysbiosis. Among them we have those reported by Zheng P and his group [36], where through thorough analysis, they describe the interesting link between dysbiosis and Type 1 Diabetes Mellitus. The above has also been analyzed by other authors [37,38]. Something similar occurs in Hashimoto's Disease [39], where there is improvement of dysbiosis, when using the great benefits of Intestinal Microbiota Transplantation (IMT). The articles that link dysbiosis with nonalcoholic fatty liver and its improvement with Intestinal Microbiota are not negligible [40]. As well as those who refer to the metabolic syndrome [41]. One of the most frequent conditions in the world is obesity, a disorder in which numerous and interesting treatment schemes have been sought, both medical and surgical. Now, how does dysbiosis influence these processes and, is the intestinal microbiota considered useful in them? Up to 66% of dysbiosis has been found in obese patients [42] and it has been determined that intestinal dysbiosis substantially influences the condition [43]. IMT has been shown to be effective in treating Morbid Obesity, since Obesity is a state of continuous inflammation [44].

Dysbiosis in Rheumatic Diseases. We will review two of the most common as are Osteoarthritis and Osteoarthritis. Regarding Osteoarthritis, a new metabolic phenotype has been detected, even though the mechanisms of how these metabolites of the Intestinal Microbiota contribute in their pathogenesis are not yet clear [45]. Regarding the effects of Intestinal Microbiota Transplantation in this condition, its possible effect on the condition has been considered [46]. Osteoarthritis, as another process with diverse inflammation, which in many cases is so intense that it produces disability, has been included among the conditions that have to do with dysbiosis. And not only intestinal, but dermal, oral and pulmonary [47]. Dysbiosis of the oral Microbiota. Oral microorganisms can move to the intestine and cause dysbiosis of the microbiota located there [48].

It has been shown that Porphyromonas gingival is can be transferred to the intestine [49]. These and other analyzes [50] conclude the importance of the microbiota, as a whole, in these frequent conditions. Dysbiosis in the Urinary Microbiota. Now, are prostate and bladder related to intestinal dysbiosis? It is definitely also involved. For example, the link between prostate cancer and dysbiosis has been reported [51]. This pathology also includes the urinary microbiota. Vaginal dysbiosis. There is the same inflammatory mechanism, already considered, between vaginal candidiasis and bacterial vaginosis [52]. Ocular dysbiosis. Dysbiosis in other regions affects eye health [53]. It is therefore advisable to keep these microorganisms healthy. Dysbiosis in immunological processes. We have left this topic to the last, considering it the most important. Numerous diseases of the immune system due to dysbiosis have also been reported. Among them are Intestinal Inflammatory Disease [54], Systemic Lupus Erythematosus [55], Rheumatoid Arthritis [56], fibromyalgia [57], Refractory Pouchitis [58], Idiopathic thrombocytopenic purpura [59] and fatigue syndrome chronicle [60]. All of them with good to extraordinary results, when using the Intestinal Microbiota as therapy.

Conclusion

A. Is the Intestinal Microbiota the best non-steroidal anti-inflammatory that exists?

B. Are there many axes in the various systems as there are communities of existing microorganisms?

C. The IMT is beneficial in many pathologies?

D. In the near future, all the work will be normalized, not only of the intestinal microbiota, but of all the microbiota.

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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 patients, in order to develop this article.

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