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The Impact of the Dysbiosis Phenomena on Oral Biofilm for Psoriasis

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The scope of this article is to address some important microbiological details, which help to explain the observed dysbiosis oral phenomena in psoriasis. Psoriasis is a complex inflammatory skin disease, also related to the high level of distress and affects the mental health levels, with important practical implications, such as levels of patient adherence to medical recommendations, difficult for the adoption of healthy lifestyles, and loss of ability to maintain adequate personal care, such as oral hygiene, which contribute to observed adverse outcomes in the disease.

Under the heading of Microbiology, the biofilms exist in all known ecosystems and within certain parameters, it remains stable in relation to the environment that contains them, the so-called ecological balance. However, under specific conditions, the balance is disrupted and the biofilm population changes significantly both qualitatively and quantitatively, what characterizes the dysbiosis phenomena [1]. Dysbacteriosis is a clinical condition resulting from the prolonged, uncontrolled and overlapping action of chemical, physical and / or biological control agents of microbial populations that allow the entry and fixation of agents originally foreign to that medium, leading to serious systemic consequences.

The biofilms are complex microbiological systems endowed with a high level of organization, where their populations of different genera and species, maintains diverse relationships types among themselves in function of specific characteristics like environment, genetics, nutritional availability, protection, environmental oxygen level, pH, and others resulting in microbial super populations endowed with a high degree of virulence and pathogenicity, clearly evidenced by adverse outcomes produced, such as episodes of refractoriness to established treatments instituted for psoriasis [2]. The oral dysbiosis is the result of an important parasitism, which when the patient has a competent immune activity, promotes activation of the trigger of the local inflammatory component, that is to provoke alterations in the supporting tissues of the dental organ in order to try to contain, an evolution from infectious to systemic sepsis from the oral focus. It is noteworthy that today these diseases are considered to be the result of parasitism of the pathogenic microbiota, even though the dysbacterial and / or dysbacteriotic dental biofilm does not, in principle, present protozoa, which in practice is not uncommon. Often this inflammatory process is effective in preventing the development of a generalized infection, yet it produces insidious damage throughout the body, which will only become evident throughout life. Including many phenomena related to oral dysbiosis, today it is known that, to a large extent, they are also responsible for unsuccessful aging. This picture becomes more dramatic when it happens in an organism that presents chronic non-transmissible degenerative diseases, such as psoriasis. Although intrinsic mechanisms are still poorly understood, clinical evidence indicates that when present, diseases of the dental organs produce a significant worsening of the skin lesions.

According to a world consensus, when the Evidence Based Methodology is adopted, it made possible to reach a level of

knowledge that would be impossible to achieve in the previous scientific paradigm, based on the Cartesian Logic [2]. For human beings, according to Internal Medicine and Therapeutics principles has been observed with high frequency in daily practice, patients evolve differently to the assumptions of the pathophysiology known of the diseases that led them to seek care, being biofilms in conditions of dysbiosis, one of the factors risk more prevalent, and the implications with sepsis one of its more eloquent clinical manifestations [2]. This is exactly what happens when the oral implications for psoriasis, where oral biofilm in dysbiosis conditions, and its management are analyze, from the perspective of the Oral and Systemic Health Based on Evidence (SOSBE/SOHBE), one of the most important practical implications, a new interdisciplinary field of knowledge organized from a Cochrane Protocol Systematic Review and Metanalysis - Complementary Therapies for Chronic Plaques Psoriasis [2,3].

Thus, for many years, already it has been known, the existence of 7 basic conditions of interaction between these two knowledge fields (Dentistry and Dermatology), which are capable of resulting in up to 26 clinical scenarios, which, when overlapping, explain the high prevalence of unexpected and unfavourable results observed in the management of different clinical courses of psoriasis, independently of the adopted algorithm. The clinical scenarios were classified as 2 two key issues groups. A group related to the pathogenesis of psoriasis and another group related to the causes or clinical implications of the outcomes observed during the evolution of the disease, but always the oral dysbiosis when present worsens all the clinical scenarios studied. [2,4]. Oral Echology studies have brought important contributions not only to understanding the impact of dental biofilm in a condition possessed, not only for the oral cavity “per se” but the whole organism, according to specific studies in Cardiology, in Neurology, in Gynecology / Obstetrics, Gastroenterology and more recently in Dermatology [4,5].

Using principles of specificity and sensitivity, not only for psoriasis but virtually for all inflammatory dermatosis, it is important that patients be warned that even small gingival bleeding observed during dental brushing, to spontaneous and abundant bleeding, bad breath, gingival edema, putulent gingival secretions, dental mobility and lymph node enlargement near the oral cavity are strong indications of infectious processes in the tissues of the dental organ, able to elicit important responses from immune activity and should be interpreted as potential complicating clinical courses into adverse outcomes in Dermatology. Following an Evidence-Based Health assumption (Haynes 5 Steps for MBE) (Higgins 2011), after a systematic reviews and meta-analysis were completed, it was conducted at the Sector (SOSBE), Psoriasis I Ambulatory, Department of Dermatology, Escola Paulista de Medicina, Federal University of São Paulo, Brazil, an observational study of semi-randomized sample, between 2013 and 2016 with a total of 343 patients with psoriasis and inflammatory dermatoses under different treatment algorithms, and they were followed for 46 consecutive months. The therapeutic resource applied was, a set of procedures, among us called, the SOSBE/ SOHBE Protocol for improvement clinical adherence to medical recommendations, applied as co-interventions with conventional treatments. One the most important issues from the study, was that about 96.2% of the treated cases were observed in the presence of dental biofilm in the condition of dysbiosis (periodontal disease + lingual sabur concomitant with Psoriasis) until then, without any form of management [2].

The SOSBE/SOHBE Protocol - Oral and Systemic Evidence-Based Health Protocol is based on Complementary Therapies WHO - Hospital Dentistry, Oral Microbiology, and Complementary Therapies NCCIH / NIH - Behavioral Medicine - Psychobiology - Clinical Neurosciences, besides the incorporation of the principles of Haptonomy and Neurodiversity. One of the most important aspects evidenced in the project was the impact that the quantitative and qualitative changes of the dental biofilm in the condition of dysbiosis/ disbacteriotic caused in the clinical courses of the great majority of conventionally treated patients, where the SOSBE / SOHBEprotocol started to be applied in a co-intervention regime. And not only in cases of psoriasis, but also acne rosacea and hidradenitis suppurativa. The most significant results were maintenance of conventional medication dose in cases that before the application of the SOSBE/SOHBE Protocol presented low responsiveness to the treatments and increased interval between exacerbations. The SOSBE/SOHBE Protocol can be applied by any health professional, as long as properly trained.

The follow-up for assessment was done by dermatologists and dental surgeons, during the period of outpatient care of the patient in the sector, and at the present study least in 2 different times for each patient with 30 days intervals.

Thus, the dental biofilm in the condition of dysbiosis / dysbacteriosis, is a microbial community of high complexity of trophic cascade and constitutive elements that maintain interrelated ecological relationships among them, endowed with a high degree of virulence. However, in many cases, because these microorganisms have been detected outside their primordial ecological niches, their action ends up being poorly understood, however, as their presence was detected in the dental biofilm, it is clear that there was a closure of the oro-fecal circuit, which may have been caused by various factors. Examples are intestinal viruses and some species of Gram + bacilli, composing the subgingival dental calculus.

Thus, among the reports of microorganisms found in the biofilm under dysbiosis condition, it is possible to cite uni protozoa and multicellular, bacteria such as cocci and Gram+, bacilli resistant strains of alcohol and acid, aerobic microorganisms, facultative anaerobic, strict anaerobic, spiral bacteria, vibrios, filamentous bacteria, and fungi, yeasts of different species, viruses of various kinds, especially those responsible for viral infections enteric, dermotropic and respiratory, rickettsial, several species (PPLO) or Mycoplasma different Taxon (genres, species and prov-

enances) and prions, which maintains interdependent relations and are endowed with a high degree of virulence. In addition to the microorganisms mentioned in the ultra structure of the composition of disbiosys oral biofilm also are host cells of different types, such as the oral mucosal lining, erythrocyte debris, platelets, leukocytes, and extracellular matrix collagen residue and other proteins such as fibrin, remaining imuneglobulinas, hormones, digestive enzymes, sugars, lipids, mineral salts and mainly consisting of calcium, magnesium, phosphorus, which contribute to the rigid consistency tartar or dental calculus in both above portions as their sub- gingival, and provides biofilm micro-organisms with conditions including strict anerobiosis. With the increase in the qualitative and quantitative complexity of the disbiotic / dysbacteriotic biofilm, the addition of other substances such as the volatile derivatives of sulfur and nitrogen that produce fetid odors elicit inflammatory responses. Studies show that when dysbiosis / oral Dysbacteriosis affects a healthy body is able to elicit a set of systemic inflammatory reactions that mobilize the defensive elements of the blood for convergence in the area of the jaw, then settling down in order to contain the destructive advance dental biofilm, aggressive periodontitis, so that a generalized infection does not occur at the expense of great efforts of the immune activity and high energetic expenses.

The evidence points to the relevance of the topic of dysbiosis / oral dysbacteriosis as an important modifier of clinical course in several settings. In a previous report of the first decade of the present century, the WHO had pointed out the growth in the sudden admission in Intensive Care Units, in several countries, of patients originally not eligible for these treatments. The suspicions of the sudden aggravation are that they have been infectious processes in the oral cavity, frequently associated with the periodontal diseases Among the risk factors involved in these outcomes, oral dysbiosis / dysbacteriosis occupies an important position, which contributed to the (WHO) reclassification of the estimated risk margins of dentistry from, originally low to medium, an index similar to that of orthopaedics. According to the report the prevalence of advanced periodontitis in the United States is about 12% of the adult population [2].

Thus, as conclusion of the analysis, it is important to state that the findings obtained in our last observational study are similar to the findings of one of the 3 systematic reviews that were part of our preliminary research, developed within the original project of Protocol : Complementary Therapies for Chronic Plaques of Psoriasis (Monson 2014), and titled Periodontal Aspects of Psoriasis: A Systematic Review (Monson 2016a), where the evidence pointed to the scenario in which periodontal diseases worsen a previously manifested psoriasis [4]. 830 studies of different research designs were evaluated. Ten studies were recovered between case-control, cohort, which totalled 292,461 participants. Of the oral diseases, those that affect the periodontium are most related to the worsening of psoriasis. Periodontal destruction (periodontitis) is usually a consequence of inflammatory destruction as a result of poor oral hygiene and subsequent accumulation of dental biofilm in the condition of dysbiosis / dysbacteriosis, present in children, adolescents and adults. Many general studies have shown that patients with psoriasis tend to experience more bone loss than in relation to sex and age matched controls [4]. Based on the original research project, it is possible to affirm that one more element was incorporated into the pathophysiology of psoriasis: the impact of oral health status on the evolution of the disease. This can be summarized as "the loss of body and oral well-being influence each other and affect the mental state of individuals by impregnating them with a heightened sense of discomfort as well as feelings of illness and distress in a growing vicious circle of pathogenicity". Present in the clinical presentation, but neglected [2].

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