

Periodontitis

not the symptom but the source must be treated

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Effective microorganisms reduce the immune system's stress and activate it. In turn, the strengthened immune system supports the effective microorganisms. Bacteria don't reduce bones. The bone remodeling therapy must be simultaneous.

Foundations

The earth is ca. 4.6 billion years old. The ribonucleic (RNA) and deoxyribonucleic acid (DNA) based life started before ca. 4 billion years in the form of microorganisms. The human is the only survived form of the homo species and since 200,000 years fossil documented. This is a very short period in evolution history. Microorganisms are twenty thousandfold older than humans. They are our planet's oldest creatures. Due to the significant longer evolution they are more adapted and more viable than humans. There is no area which is not populated by microorganisms [1].

The human has round about one quadrillion microorganisms on and in his body. Mathematically and microscopically seen, the homo sapiens is more microbe than human. There are up to 100 microorganisms per human cell [2]. 90 percent of the microorganisms populate surfaces. There is one specialty in this point of view. We consider mouth, skin and gut as surfaces [3]. Microorganisms make us sick and fat. But nevertheless we can't without them [2]. Round about 400 bacterial species can populate periodontal pockets. Other 300 kinds of bacteria can be found in the rest of the buccal cavity [4].

Highest importance as etiological factor will be ascribed to the biofilm and the insufficient patient's mouth hygiene's effectiveness for the inflammatory kinds of marginal periodontopathy's genesis [5]. In the biofilm life conditions are evolving, which are specially suited for particular microorganisms. In general, the amount of microorganisms is increasing [6]. The composition of microorganism's quality and quantity is changing [7]. This is very different from human to human. The genetic conditions, diet, drinking habits, luxury food and organic disorders are crucial for that. Microorganisms, which are bad for one human can be good for another human [8].

In the inflammation's therapy the main focus is the microbes' reduction. This is not a selective but a general microbes' reduction. Therefore useful microbes as well as harmful microbes were reduced. The objective is the microbes' virulence reduction. „War against the microbes“ is the slogan [9]. Between the 1950's and 1980's this was the breakthrough. By means of antibiotics infectious diseases are conquered. Such diseases are pox, tetanus, diphtheria and polio for instance.

Under antibiotic shield and by lowering the immune defense with cytostatics morbid organs could increasingly well be repaired or replaced [10].

Nowadays transplants and artificial spare parts are no exception but standard patient-centered care. By the medicine's "miracle" apparently nearly all diseases could be eliminated. The average life expectancy increased obviously. The miracle's crucial aspect is that the model "Bacteria as pathogenic germ" has established itself as far as possible [10]. Microbes were said to be liable for the most diseases. If we succeed to kill all germs, we could live free of diseases. Alternatively we could use the body's own army of antibodies to kill all germs. But more and more will be determined that there are no microbial enemies. Instead we are realizing, that the most of our fatal complaints are linked with bad diet, lack of motion, smoking, alcohol and other lifestyle habits. Thereby the battlefield in the war against the diseases is relocated extremely. With the words of Walt Kelly's comic figure Pogo: "We have found the enemy, and we are the one".

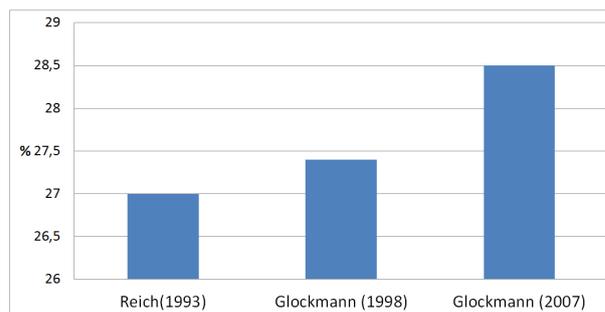


Fig. 1: periodontitic causes for tooth loss

"The medicine's greatest merit in the 20th century is the disease of civilization's discovery"[11]. When a health problem occurs, the medical treatment usually concentrates on actions against symptoms. But for the assumption, thanks to the progress of dentistry diseases like periodontitis are controllable, despite highest efforts there is no evidence in this subject [12]. Meanwhile it is clear for everyone to see, that symptom's conventional treatment alone encountered its limits [11]. Figure 1 shows the comparison of 3 huge IDZ studies between the years 1993 and 2007. The cause "periodontitis causes tooth loss" is increasing steadily. The comparison DMS 3 (5,040 random

persons) and DMS 4 (4,600 random persons) shows an increase in periodontitis in table 1 as well.

Tab. 1: Comparison DMS 3 and DMS 4 Study in attachment loss of 35-44 years old patients

	DMS 3	DMS 4
average extent > 2mm (%)	45,4	42,4
average severity (mm)	3,7	3,9
median AV (mm)	4,8	4,8
AV > 6mm (%)	30,5	31,1
percentile (mm)	3,4	4,1

In 60 years antibiotics „War against the microbes“we won many battles. But we will loose the war definitively! Microorganisms are self-adapting and develop further itself better and faster than we can imagine. We still could develop new drugs for combating microorganisms. But sometime there is one „super germ“- in the development driven forward by humans [10]. Maybe it is time to stop considering medicine as war against the nature. Maybe we should find a new approach for how to consider human health [11]. Microorganisms are our friends. "War against the microbesimplies losing [13]. There is an inseparable relation between humans and microorganisms. Microorganisms are divided into ca. 20% useful ones, 30% harmful ones and 50% neutral [10].

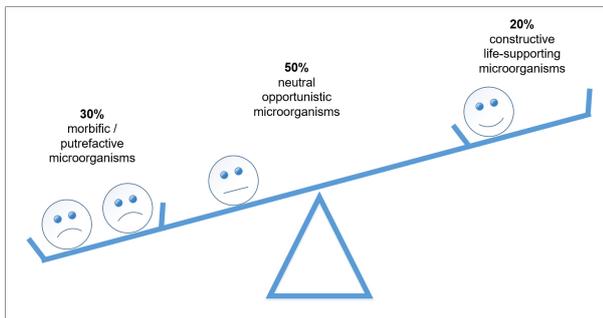


Fig. 2: morbid environment

So far misconceived - the key role plays the neutral bacteria. We need the microorganisms. Without them humans are not viable. As the past has shown, a general germ's virulence reduction only shows a temporary effect due to the percental ratio between useful, harmful and neutral microorganisms sustains. To achieve a permanent therapy success we have to increase the useful microorganisms.

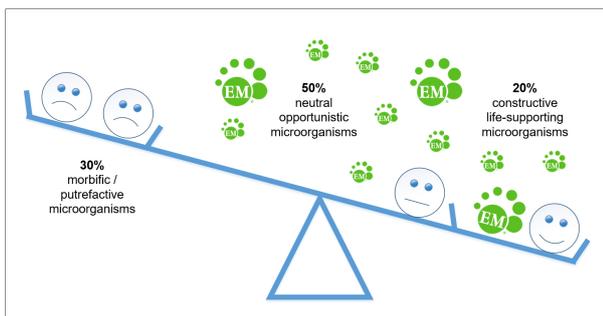


Fig. 3: constructive environment

If they are the majority, the neural ones will join the useful ones as well. The useful microorganisms will eliminate the harmful ones now. Already in 1982 Prof. Higa, University of Okinya, developed after 20 years research the „effective microorganisms “EM. Nowadays there is no section which doesn't use EM. One important characteristic of EM is, that there are microorganisms which needs oxygen and there are other ones for which oxygen is destructive. This Prof. Higa's detection, that no scientist would previously have thought possible. How this is possibly anyway? The reason is the mutual exchange of the food sources.

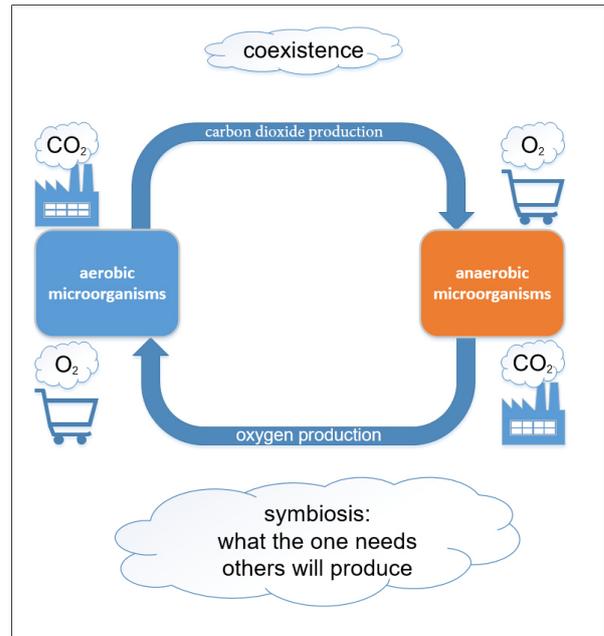


Fig. 4: aerobic and anaerobic microorganisms in one system, coexistence instead of competition

About 90% of the microorganisms are on surfaces. Surfaces are skin, mouth and gut. If we succeed to change the surface's microbial composition in such manner, that we therefor need less body's defense, body's defense will be free for other usage. Free body's defense now can be used for other invasions [13]. In periodontitis, marked by bone reduction, the body's own immune system is overburdened. Comparable to a capitulation, the body tries by means of immunologic reactions to reduce the bone to get rid of the troubled tooth: Tooth out - Periodontitis will healing. The body only can provide a restricted amount of antibodies. Are there other infects additionally to the periodontitis, the body's defenses effectiveness is restricted.

What periodontitis should have to with the gut? Two third of our body's immune cells are in the gut. Is the gut environment defective, this leads to problems in immune defense and health. Enzymes play a big role while digestion. Currently ca. 4,000 kinds of enzymes are known. Two third of them in the stomach-gut-area.

Without enzymes there is no digestion. Without digestion there is no immune defense [14]. Why one should involve the skin into the periodontitis therapy? The skin is our biggest organ. It is littered with

microorganisms. It is a steady challenge for the immune system to preserve the protective function. Will this part be inherited by effective microorganisms, it is an enormous relief of the immune system [15].

Periodontal Treatment

Periodontal Inflammation's Therapy

Here we subdivide into professional and home scope.

Professional Therapy

Management of biofilm, including complete subgingival cleaning. In pockets deeper than 6mm, we are working with the Dürri Vector paro[®] and use the Dürri RinsEndo[®] with CHX for pocket flushing.

Home Therapy

For effective healing of chronically periodontal inflammations, which often persisted over years, it is beneficial to support the body's immune system as far as possible. Hence, not only change to regenerative microorganisms in the buccal cavity but also a general change of all microorganisms: buccal cavity, skin, gut. So we activate the immune system additionally with the gut. We decrease the demand of immunologic defensive forces by simultaneously involving the skin. By involving gut and skin into our PA therapy, we have an enormously increased defensive force concerning our therapy area mouth. For this reason we are recommending EM toothpaste for home care usage in the mouth, EM liquid soap for the skin and EM SAN for the gut.

Therapy of bone remodeling

Periodontitis is characterized by inflammations and bone reduction. Bone reduction occurs by body's processes. There are no bacteria, which reduce periodontal bones. While the part inflammations is reversible, the bone reduction is irreversible. Bacteria causes inflammations. Body's processes causes bone reduction by osteoclasts [16]. There are different causes for inflammations and bone reduction: bacteria and osteoclasts. Different causes require different therapies.

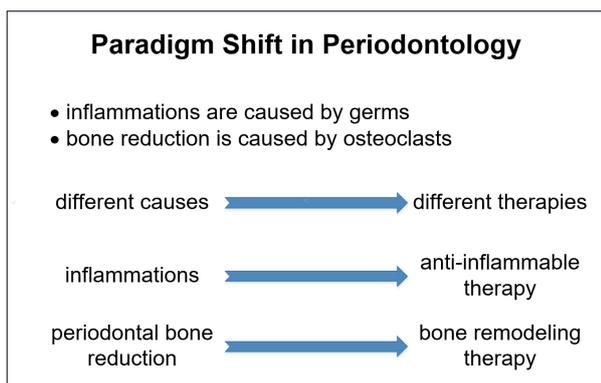


Fig. 5: Periodontitis, different causes – different therapies

Inflammation's reduction is very important to unburden the immune system in a first step and as precondition in the therapy of bone remodeling [17, 18, 19]. If there are intense inflammations, the bone remodeling therapy isn't possible. Doxycycline is bacterial consumed in inflamed environments. It isn't available in sufficient quantity for the inhibition of osteoclasts.

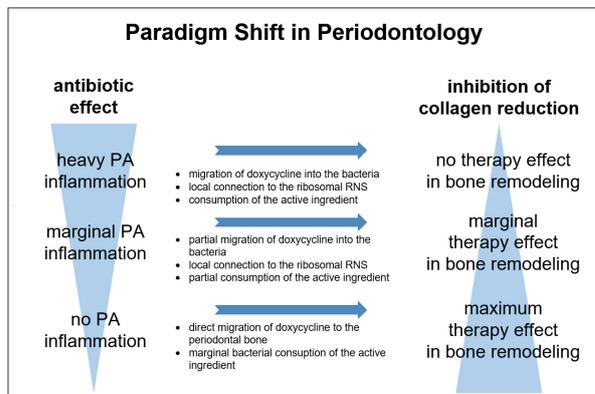


Fig. 6: Relation between antibiotic efficacy and inhibition of collagen reduction

The therapeutic objective must be the usage of active doxycycline, for the inhibition of the collagen reduction, as far as possible. So, the bone remodeling can be changed to its required balance. We will never achieve 100 percent. Thus, a part of the active local doxycycline will unroll its antibiotic effect. Although we are working with an active local doxycycline, it is a probiotic PA therapy, which we have described in Dental Barometer 6/2014 [20].

Abstract

Periodontitis signalizes the capitulation of the immune morbid body's reaction for tooth preservation. Many millions of microorganisms rule the buccal cavity's environment. Our therapy is not about to reduce the quantity of microorganisms. Rather it is about to change the balance from the degenerative sector to the regenerative sector. The degenerative sector comprises the morbid environment while the regenerative sector comprises the constructive environment. A balance, which is pressed to the regenerative sector must be retreated permanently. About 90% of the microorganisms live on top of surfaces (mouth, gut, skin). A change to the regenerative sector activates and unburdens the immune system. The immune system gets many free capacities from EM. Hence, the immune system now can take care of its origin important body's functions. Periodontitis is characterized by inflammations and bone reduction. Periodontitis' causes are multi-attribute events. The single inflammation's therapy is not sufficient. Bone reduction results from body's processes. There are no bacteria which rebuild periodontal bone. Thus, there have to be a parallel direct therapy of bone remodeling.

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