

# THEORETICAL AND PRACTICAL ASPECTS OF THE CORRELATION BETWEEN DIFFERENT GENERAL AFFLICTIONS AND THE DENTAL MANAGEMENT OF THE PATIENTS

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**Keywords:** dental management, general affliction **Abstract:** As it is well known, any dental treatment will be preceded by anamnesis, actually by an extremely detailed interrogation, in addition to a very rigorous clinical examination, regarding the patients' health condition. Specifically, any dental treatment can only be performed after such an interrogation in order to avoid, sometimes even from the very start, any possible complications or failures of this extremely complex and at the same time complete type of treatment.

**Cuvinte cheie:** management dentar, afecțiuni generale **Rezumat:** După cum foarte bine se știe, orice tratament de medicină dentară va fi precedat, pe lângă un examen clinic foarte riguros, și de o anamneză sau mai bine zis de un interogatoriu extrem de amănunțit, în ceea ce privește starea de sănătate a pacientului. Concret, orice tratament dentar nu va putea fi abordat, decât în urma acestui interogatoriu al pacientului, pentru a putea fi evitate, uneori chiar din start, eventualele complicații sau chiar eșecuri ale acestui tip de tratament extrem de complex, și în același timp extrem de complet.

An individual's state of health has a major impact, positive or negative, on his wellbeing and on the society in which he/she lives.(1) Disease is a deviation from the normal state of health, mainly due to changes of the internal environment or changes caused by the actions of the agents from the external environment, which affect the whole body or only parts of it. It has a known or unknown etiology, a certain pathogenesis, a specific evolution, clinical or laboratory symptoms, as well as a specific diagnosis, according to its severity.(1)

## General data

Since 1946, the WHO (World Health Organization) has defined the state of health as: "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity". This definition led to a new understanding of the disease as a multidisciplinary issue. The general state of health has an indissoluble relation with the type and quality of life, the latter playing an important part in the patients' health care and is an important decision factor regarding the patients' or doctors' choice of an appropriate treatment for the disease the patient is suffering from.(1,2,3) The patients who require the specialized treatment of a dental office, in very few cases have a perfect health condition, most often they mention at least one general affliction, a common situation especially in the patients over 45 years old. Recognizing the clinical signs and symptoms characteristic for a patient's systemic disease, requires a rather complex medical knowledge, from the part of the dentist, as well as the ability to correlate this with the treatment that the patient will have to follow, with the patients' emotional and mental condition, with the way the patient perceives his/her illness, with the patients' medication and the side effects which it could trigger.(3) A very difficult problem, from a scientific point of view, is to establish a causal relation between the existence of systemic diseases and the changes occurring at the

level of the dento-maxillary apparatus. There are many systemic afflictions which have repercussions on the visceral and somatic components, but the less known ones are those occurring in the dento-maxillary apparatus.(4,5) Many times, the lesions observed in the oral cavity can serve as diagnostic elements in the detection of serious conditions such as leucosis, various afflictions caused by vitamin deficiency, diabetes mellitus etc.

In the study of oral lesions, it is important to bear in mind that there is a great variety of lesion forms, which are explained by the reaction peculiarities of the complex tissues and in some special situations by the tissue bio-trophicity. Also, the progress of the spontaneous evolutions of oral lesions or lesions under medical treatment of the underlying condition, becomes a very useful complementary indicator in assessing the evolution the clinical picture of the disease and as such, an objective indicator of prognosis.(1) In dentistry, (dental medicine), during in almost any therapeutic intervention, there is the possibility that incidents, accidents or complications may occur. Most of them can be related to incomplete knowledge of the patients' pathology. It is important to remember that dental sufferings may represent early signs of a systemic pathology, often of great severity, or they may be the result of side effects of the drugs used by the patient.(1) Incidents and accidents can occur in connection with an inadequate therapeutic attitude, which can lead to a iatrogenic disorder. This can happen during long-term therapeutic interventions, during surgery, such as tooth extraction, during the insertion of dental implants etc., or, why not, even after a simple and ordinary local-regional anaesthesia.(2,6) The involvement of the dentist in the treatment of a patient with a general condition compromised by the existence of a complex general affliction, requires a certain amount of general medical knowledge, which is derived from a continuous medical training that places man and the man's health in the centre of the dentist's preoccupation.(1)

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Article received on 23.01.2012 and accepted for publication on 18.05.2012  
ACTA MEDICA TRANSILVANICA September 2012;2(3):278-281

## Classification of health-risk patients after ASA (American Society of Anaesthesiology)

To assist the dentist in taking the therapeutic decision for the patients, in the cases where there is a risk for the occurrence of accidents, the American Society of Anaesthesiology (ASA) established a criterion for classifying the patients' health, as follows:(1,3)

- ASA I – The patient does not indicate the existence of a systemic affliction with clinical symptoms, the dental treatment does not raise any special problems, however the execution of routine manoeuvres poses a minimal risk of triggering adverse reactions;
- ASA II – The patient exhibits a systemic affliction in a mild to moderate form and/or a significant health risk factor (drug allergy, smoking, pregnancy etc.). A careful conduct, as well as routine precautions are required in order to avoid any risk of unwanted accidents or incidents;
- ASA III - The patient has a severe systemic affliction, with symptoms that manifest and limit his daily physical activity, as well as a fragile balance, if viewed from a medical point of view. Here, the dental practitioner requires routine precautions and he should change the dental treatment depending on the patient's clinical symptoms. Consulting the family physician of that patient is desirable;
- ASA IV – A patient with a severe systemic affliction, which has immobilized him and risked his life. Specialised advice is required before any dental treatment and the treatment should be performed only in a hospital unit, equipped with an intervention service, in case of emergency;
- ASA V - A patient with poor general condition, with minimal chances of survival, which requires only emergency dental treatment. Such treatment can only be performed when the patient's condition improves enough to allow the procedures.

Definition of Health: It is difficult to establish such a definition, for several reason, described by BL Plozza and IR Diamandescu in their book "The psychological dimension of medical practice", published in the year 2000:(1,6) - the possibility of an "underground" development of some pathological processes, asymptomatic in an subjective plane and during a physical examination, which can only be detected by laboratory tests;- due to the patients' subjective nature, who delays the detection of the affliction, or reports the wrong signals;

After Pambuccian (1,7), the disease can be characterized as follows:

- *subclinical case*, in the absence of symptoms, the diagnosis is established by laboratory methods, identifying the pathogen agent or the body's immune response;
- *functional*, the symptoms tied to organic lesions do not appear for some time; instead, these reflect functional disorders of the anatomical – physiological systems;
- *idiopathic*, when it is an affliction with unknown etiology and pathogenesis;
- *professional illness*, a special category, represented by afflictions caused by the action of harmful physical, chemical or biological agents, characteristic of a certain profession.

However, afflictions can be classified by using various criteria, such as: the way the affliction evolves, its etiology, affected organs and systems, syndromes (which are a combination of signs and symptoms which together make up a picture with morbid characteristics).(1) According to the current definition of health given by the WHO, it is the "state of an individual's psychological, somatic and social wellbeing" and its loss means the disease, "an existential situation, different

from the normal" and experienced by the individual. Because of the disease, the individual loses one of his essential attributes: "his health, which limits his normal ability to adapt to the demands of the environment, including the self-imposed demands, being synonymous with a state of psychic and somatic wellbeing.(1,6) Through the dysfunctions it produces, the disease can have various influences on the individual, including psychological disorders, affecting the individual's social life in different ways, such as impairing some of his movements and physiological abilities, limiting or even interrupting his employment, as well as certain extra-professional activities, causing changes in his relation with other people, also having economic implications etc.(1,4,6,8) Psychological stress, as the one determined by the contact with the dental office and the environment with its specific treatments, can cause symptoms of general illness such as hypertension, which can lead to an acute relapse of the disease evolution (seizures, colitis, hypoglycemia etc.) and can be the cause for serious, less serious and sometimes extremely serious complications (allergic reactions, heart attack in older people).(1,4,6)

There are almost no general afflictions, which have any influence on the dento-maxillary apparatus or which show any symptoms in the structures of the oral cavity. The oral pathology is a reflection of the suffering body, which in turn is reflected on the decision of making a dental treatment. Most of the times, the only necessity is a sound judgment and a responsible attitude from the part of the doctors, regarding the possible risks and their ability to respond quickly, effectively and knowingly, at the time of the accident or incident. In our therapeutic opinion, a doctor should properly evaluate the physical, biological and mental state of a patient; if needed, he should consult a specialist regarding his patients' health problems and listen to the patients' needs and necessities. (1,9,10)

## The relation between the patients' health and dental periodontal afflictions

As we have seen in the literature, many of the general conditions the patients suffer from can be a subject of discussion on dental management. Among these, the most important afflictions are cardio- and neurovascular, neurological, endocrine, psychiatric, autoimmune etc. We will try to present some of the implications of these general afflictions in relation to dental management, according to our experience and the data from the literature we studied.(1)

Systemic afflictions are often involved in the occurrence of accidents, incidents or complications in the dental office. To make an accurate assessment of the patient's general state of health, a careful history, with reference to every system and organ, is mandatory. A dentist does not need to diagnose the patients' general health status, but it is his responsibility to refer the patient to a family doctor if he suspects an undiagnosed general medical affliction or when a known affliction may present a risk factor for the treatment that the patient is about to undertake in the dental office.(1,3) Interdisciplinary consultations have already become a reality. Often, the general practitioner refers the patient to the dentist for the diagnosis and management of lesions associated to the underlying disease or its treatment and in a similar manner, the dentist refers the patient to a general practitioner when his patient presents serious risk problems regarding the dental treatment. The interdisciplinary consultation has the purpose of limiting a dentists' liability, will ease the patients' anxiety and will also provide additional information on the patients' health and the potential risks the patients are exposed to.(1,3)

What should be mentioned and well understood is that it is the dentist who makes the decision regarding a patients'

therapeutic conduct and is ultimately responsible for the performed treatment.(1) Systemic afflictions are often involved in the occurrence of local-regional diseases. If we refer to the relation between periodontal-dental diseases and one of the most common afflictions of the vascular system, namely atheromatosis of the cervicocerebral arterial system, we can observe, that in humans, it is localized mainly in the proximal region of the cervicocerebral arteries. This location, observed during the time of Virchow, can be explained by the hemodynamic formation mechanism of atherothrombosis at the level of the aortic arch, at the level of the primitive carotid artery, as well as at the origin of the external and internal carotid artery. The further we go towards the cortical vessels, the more attenuate the process will be, because at the level of the cerebral vessels and cervico-facial massive, as well as at the level of the dento-maxillary apparatus, these processes are minimal. The main factors that cause these changes in the cervical region are related to the following:(1,10,11) hypertension, diabetes, vascular syphilis, dyslipidemia, homocysteinemia, toxic factors, smoking, obesity, genetic factors etc. Atherothrombosis is manifested by decreased blood flow in this terminal irrigation area, especially at the capillary level and consequently, trophic changes occur, that will cause dental-periodontal suffering, as well as problems at the entire dento-maxillary apparatus.(1,11,12)

From a functional point of view, between the dental structures and those of the marginal periodontal, interrelations can be established only if the blood flow is sufficient to assure their trophicity under normal conditions. If this is not assured, it can cause symptoms such as neuralgia or intolerance to certain materials used in various dental treatments, as well as a rejection phenomena of some dental implants etc.(1,13). The relation between dental afflictions, periodontal afflictions and some systemic diseases has been known for a long time. It was known, since the time of Hippocrates, that dental pathology, especially periodontitis, has repercussions on the health of other organs in the human body, mainly the joints. The term of "focal infection" has also been in use since the time of Hippocrates. This term has recently been replaced with the concept of "periodontal medicine". A concept used to describe a new research field based on data, which suggests that periodontal infections contribute to the morbidity and mortality from systemic diseases such as: atherosclerosis, myocardial infarction, cerebrovascular accidents (stroke), as well as to premature birth.(1,13) At the same time, it has been shown that the periodontal disease may have adverse effects, which may occur after a long period of time and with systemic consequences. The periodontal disease, known today as a bacterial infection, affects people aged between 25-75 years old and is one of the main causes of pain, discomfort and eventually tooth loss.(1,14,15,16) It is also known, that there is a mutual interdependence between the periodontal disease and the systemic afflictions. Periodontal diseases can aggravate the systemic afflictions (cardiovascular diseases, diabetes) in the same way as systemic afflictions (osteoporosis etc.) can influence the periodontal diseases.(1,17,18,19,20) Especially important in this context is atherosclerosis, a progressive disease which affects large and medium size vessels, which can cause ischemic cerebral attack or cardiac lesions, lesions to extremities or even thrombosis and heart attack and finally it even leads to death.(1,21,22)

Research conducted has shown that atherosclerosis is more common in the patients with periodontal disease, suggesting that periodontal and cardiovascular afflictions could have similar causes.(1,2,3) The field specific literature describes at least two biological mechanisms that may explain the existing

interrelation between cardiovascular afflictions and periodontal disease.(1,24,25,26)

*The role of the infectious agents.* The existing bacteria in the periodontal tissues could enter the systemic circulation, they could cause direct damage at the level of the vascular endothelium and could partially activate the inflammatory immune response associated with atherosclerotic disease. It has been discovered, that 45% of the atherom plaque contains at least one of the bacteria involved in periodontal disease (*Porphyromonas gingivalis*, *Prevotella intermedia*, *Bacteroides forsythus*, *Actinobacillus actinomycetemcomitans*), and 72% contains bacterial DNA belonging to at least one of these microorganisms.(1,27,28)

*Systemic factors.* Atherosclerosis is an inflammatory disease. During inflammation, monocytes migrate into the underlying tissues where the proliferation of the smooth muscle cells occurs. The consequences of the migration of inflammatory cells into the circulation of large vessels are represented by a fatty vascular degeneration as well as an intravascular clotting.(1,29) A very important issue, with consequences for the dental-periodontal structures mentioned by us in relation to systemic afflictions, is the coronary pathology, where the main mechanism for producing cerebral ischemia is low blood pressure, due to cardiac failure, as it also happens in various cases of dysautonomia, with drops in the arterial pressure. These decreases in blood flow also occur in the dento-maxillary area, causing an initial ischemia, which in turn triggers a chain of local metabolic processes, supporting the emergence of an inflammatory process and having as a consequence all the clinical manifestations which can be found in the oral pathology.(1,30,31,32,33) In the pathology of the aortic arch, some long distance afflictions have been described for quite a while. Some of these afflictions are: unilateral or bilateral cataracts, jaw muscle atrophy or the appearance of painful phenomena in the area of the temporomandibular joint (example: Costen syndrome).(1)

Even in the field of neurology, several afflictions are known, where the blood pressure reaches zero when in a vertical position, such as Schay-Drager disease, or where muscle atrophy occurs (Steinert myotonic dystrophy) and where dental-alveolar changes may also occur, which are well known in the neurological, field specific literature.(1) Some of these changes are genetic, others, such as amyotrophic lateral sclerosis or Charcot disease, are not genetic by nature.(1) This degenerative affliction also manifest, among others, through a process of atrophy at the level of the tongue but also of other structures as well.(1) We must not neglect or pass over the dental-periodontal changes which occur in major collagenosis cases, such as lupus erythematosus, Sjögren's syndrome, dermatopolymyositis etc.(1,34,35,36)

Systemic scleroderma, a chronic disease which evolves over a long period of time, is among the collagenosis afflictions with direct implications in the dento-maxillary area. It is characterized by localized or generalized tenderness of the dermis and epidermis, with or without visceral lesions. The disease has repercussions on the patients' physiognomic appearance, on his functionality, mainly due to the lesions it causes to the components of the dento-maxillary apparatus (dental lesions, periodontitis, edentations, hypoptyalism, decreased taste and tactile sensation of the tongue, impaired swallowing, peculiar face appearance) but also due to the vascular anomalies (Raynaud syndrome) it induces.(1,31)

When analyzing dental periodontal changes, we must not neglect various toxic factors (including smoking), as well as an inappropriate oral care, which can cause localized damage

and which is usually affiliated to a local factor; an assumption that does not always correspond to reality.(1)

In conclusion, the need for a detailed and accurate case history, for a medical practitioner dealing with a therapeutic dental procedure, has been clearly highlighted. Besides strictly local aspects and given the multiple implications that some general conditions have on periodontal dental health, as well as on their therapy and on the evolution of their treatment, the case history must also include data on the patients' pathology.(1,38,39)

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