

Oral Manifestations of Osteoarticular Diseases

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Human body acts as a whole and this leads to an increased occurrence of oral manifestations during the onset and development of systemic diseases. Therefore, oral pathological manifestations play an important role in the diagnosis, prognosis and treatment of diseases with osteoarticular involvement. General pathology has a strong impact on oral health which in turn is influenced by systemic factors. Oral manifestations can be used for making an early diagnosis of a serious condition that can be cured with appropriate therapy. Oral lesions can be explained by pathological processes and correlated with systemic diseases. When oral symptoms and signs are present, the disease is already in an advanced stage, due to the fact that the oral cavity is usually affected by a generalized disease. The mouth is part of the digestive system, but it has various symptoms caused by diseases located in other regions. 98 patients with oral manifestations of diseases with osteoarticular involvement were followed up in a private dental clinic from Iasi over a period of 3 years between June 2013 and July 2016. 47 patients were male (47.95%) and 51 were female (52.05%), aged between 18 and 65 years old, with a peak incidence between the ages of 45 and 60. The complex structure of the oral cavity was thoroughly explored (lips, lip mucosa, the corners of the mouth, gingival labial sulcus, oral vestibule, the internal face of the cheeks, the outer surface of gums, the floor and the ceiling of the oral cavity or the hard and the soft palate). The health status of the body is reflected by the health of the oral mucosa, which can be seen as a marker of various systemic diseases.

Keywords: oral manifestations, rheumatic fever, rheumatoid arthritis, Paget's disease.

The mouth is part of the digestive system, but it has various symptoms caused by diseases located in other regions. Various manifestations of general disorders can be seen in the oral cavity. These lesions may be the unique signs of the onset of diseases making them particularly important for the diagnosis of systemic conditions.

Salivary flow disorders (xerostomia, with hyposialia or asialia) and changes in salivary pH favor the increase of microbial virulence and impair the biological balance of the oral environment. They aggravate oro-dental lesions and cause complications in the vicinity.

The dento-maxillary system includes elements with different structures and complex functions which are interrelated clinically and functionally. When the oral system is healthy, this interrelation help maintain proper balance and trophicity.

A disease diagnosed by the dentist requires in the first instance administering therapy for the relief of the symptoms of systemic disorders and only afterwards the dental treatment is provided. Ideally, oral lesions should be cured earlier or simultaneously with the ones caused by general diseases, because these lesions can maintain the disease or aggravate the prognosis.

Due to the long-lasting therapy of chronic osteoarticular diseases, adverse reactions caused by drugs may affect the oral mucosa and microflora. They have to be differentiated from the actual oral manifestations of osteoarticular diseases. Moreover, recurrent oral ulceration should not be confused with recurrent oral aphthae, but rather treated as symptoms of rheumatic diseases.

Oral aspects in rheumatic fever

Rheumatic fever (RF) is a complication of Group A streptococcal pharyngitis caused by a delayed immune response [1]. Even if the incidence of RF has decreased in the industrialized countries, it still remains an important

etiologic factor of cardiovascular diseases. Group A β -Hemolytic Streptococcus, which is responsible for rheumatic heart disease, may cause recurrent oral ulcerations [2].

The main issue for dental practitioners is the necessity of one or two doses of antibiotic prophylaxis before dental care in RF patients with valvular heart disease, in order to minimize the risk of bacteremia which is prior to endocarditis. Prophylactic measures should also be taken following dental procedures involving gingival bleeding, when oral antiseptic solutions can be used in form of mouth wash [3].

However, the prolonged use of antibiotics affects the oral microbial environment of RF patients. Viridans streptococci causing infective endocarditis can be found in the oral flora, as they become resistant to penicillin, clindamycin, clarithromycin or rifampin [4].

The examination of oral mucosa should be complemented by the investigation of dental status. A high incidence of dental caries was associated with an increased risk of rheumatic fever in children. A study conducted on Maori and Pacific populations has shown that children with five or more primary teeth affected by caries were 57% more likely to develop rheumatic fever disease than children with no caries in primary teeth [5].

Rheumatic fever is a post-streptococcal disease. The complex forms of streptococcal infections are determined by the many different types of streptococci, the different state of responsiveness and the individual response. Streptococci are classified according to their antigenic structure, enzymatic equipment and streptococcal toxins. Beta-hemolytic streptococcus is usually found in a chronic infection focus that can be defined as a well-localized and biologically confined inflammatory process that can trigger vegetative disorders, vascular disorders and lesional manifestations by various mechanisms. Organs with

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certain anatomic features that are prone to the development of these foci are teeth, tonsils, facial sinuses and middle ear. Quantitatively, beta-hemolytic streptococcus occurs mostly in teeth and qualitatively, the most aggressive infections are seen in tonsils.

Dental foci can be odontal, located in the dental pulp and in periodontal tissues, in the apical periodontium and in the marginal periodontium.

The infectious focus of the dental pulp is intradental, and the apical and marginal foci are extradental. Failing to treat dental caries may lead to periapical infectious foci. Chronic periapical infectious foci can also be caused by incomplete pulp closure during root canal treatment in anterior, premolar and molar teeth. Marginal infectious foci are represented by chronic pericoronitis and chronic marginal periodontitis with suppurative pockets and septic tissue destruction.

In rheumatic fever, salivary changes such as hyposialia (present in febrile periods), dysphagia (which occurs during repeated angina attacks), saburral tongue, erythematous catarrhal stomatitis, glossodynia, exacerbation of dental pain may also occur.

Oral manifestations of rheumatoid arthritis

Rheumatoid arthritis (RA) is a rheumatic disease that predominantly affects the locomotor apparatus. It is clinically characterized by persistent, evolving articular inflammations, located especially in the small joints of the limbs. It is an autoimmune disease of the connective tissue, characterized by symmetrical erosive synovitis and polysystemic involvement.

Some extraarticular manifestations of RA can be found in the oral cavity. Temporomandibular disorders is the most common oral manifestation of RA. Orofacial pain, swelling or limited range of motion, caused by muscle spasm, fibromyalgia and myotonic dystrophy, may indicate that the tissue of the temporomandibular joint, which is a synovial joint, was affected by RA. The bite force in RA patients with temporomandibular joint involvement is lower than in the general population [6].

Temporomandibular joint (TMJ) pain might be similar to the myofascial pain in the muscles of mastication and to the pain in the ear or parotid gland, but in the latter case, there is no limited jaw movement, as in most osteoarticular diseases. A clicking or popping sound or the sudden onset of jaw locking indicate the damage of the intra-articular disk [7].

In RA patients, the clinical examination of the oral cavity shows malocclusion, limited mobility of the jaw, painful masticatory and neck muscles. Imaging examination may indicate the presence of osteophytes (during remission phases), bone loss in the condyle head and glenoid cavity, erosions and flattening of the joint surface. In severe cases of RA, the radiologic exam may also show bilateral TMJ ankylosis. The diagnosis of RA can be confirmed by the presence of the inflammatory mediators of osteoarthritis, such as tumor necrosis factor (TNF)- α , interleukin (IL)-1 β , IL-6 and IL-8 [8,10].

Oral microflora is just as important as oral extraarticular manifestations of RA. It was shown that RA patients have a double incidence of periodontal disease compared to the general population. Both RA and periodontitis share a common etiologic agent, *Porphyromonas gingivalis* which destroys chondrocytes of the knee joints and stimulates citrullination, which favors RA development. Oral anaerobic bacteria may trigger the presence of antibodies in the synovial tissue and serum and even oral bacterial DNA was found in the synovial fluid of RA patients. The outcome of

these diseases may be also interdependent, because it was shown that successful periodontal therapy leads to a decrease in local and systemic inflammatory processes by improving endothelial function [3].

Other oral manifestations found in RA patients include hyposialia, saburral tongue, multiple caries, pale pink oral mucosa with blisters, glossodynia, angular cheilitis, dry labial mucosa.

RA patients develop frequently Sjogren's Syndrome, which has the most orofacial symptoms. Sjogren's syndrome affects moisture-producing glands, such as lacrimal and salivary glands [11]. In patients aged over 40, xerostomia is the major oral symptom of Sjogren's syndrome, followed by painless swelling of the parotid and submandibular salivary glands. Lack of saliva and thickened saliva may result in taste alterations, chewing and swallowing problems, burning mouth syndrome and irritations of oral mucosa [12].

Juvenile rheumatoid arthritis is a distinct clinical form of arthritis, with an onset over the age of 6 months, which occurs predominantly in female subjects. When TMJ involvement is manifested in childhood, the mandibular growth restriction may lead to micrognathia and ankylosis.

Another osteoarticular disease with oral involvement is Paget's disease of bone, which is also known as osteitis deformans. It occurs especially in the elderly and is characterized by skeletal hypertrophy that affects mostly the long bones and the skull. Skull deformities include protruding chin, hypertrophy of the mandibular bone and widening of dental alveoli, which leads to spontaneous tooth loss. Paget's disease of the oral mucosa is extremely rare. It is characterized by painful erythematous lesions on the oral mucosa which progressively grow in size. It is an intraepidermal epithelial neoplasm which may indicate the presence of malignancy in other parts of the body. That is why, correct diagnosis is very important for the early management of the neoplastic disease [13, 16].

Experimental part

Material and method

98 patients with oral manifestations of diseases with osteoarticular involvement were followed up in a private dental clinic from Iasi over a period of 3 years between June 2013 and July 2016. 47 patients were male (47.95%) and 51 were female (52.05%), aged between 18 and 65 years old, with a peak incidence between the ages of 45 and 60.

Results and discussions

The study included 98 patients with oral manifestations of osteoarticular diseases. The cases were divided into three groups, according to their pathology.

The 1st group includes 12 patients (12.24%) with oral manifestations of rheumatic fever and rheumatic heart disease. In this study group, salivary changes, such as hyposialia, dysphagia, saburral tongue, erythematous catarrhal stomatitis, glossodynia and, in some cases, the exacerbation of pain in dental foci of infection.

Prophylaxis is an important measure both for prevention of complications, and for a complex and complete treatment of rheumatic diseases. The therapeutic act involves a multidisciplinary team made of rheumatologist, dentist and otolaryngologist. The successful treatment of caries and infectious foci means avoiding relapses and complications.

The 2nd Group includes 84 cases (85.71%) with oral manifestations of rheumatoid arthritis, of which 47 cases had joint inflammatory activity.

Rheumatoid arthritis is a disease of the connective tissue, a distinct form of rheumatic disease with predominant manifestations in the locomotor system. Chronic non-suppurative polysynovitis of small joints is a characteristic of the disease.

Articular inflammatory processes are symmetrical and lead to ankylosis and deformity. The disease is progressive, with remissions and exacerbations. The symptoms of the disease usually include arthralgia (with the involvement of the small and medium joints of the upper and lower limbs, bilaterally and symmetrically), morning stiffness, functional impairment, but sometimes temporomandibular joints may also be affected, mostly during childhood. The latter manifestation lead to malocclusion and bird facies, that can create problems with chewing.

The joints are swollen and painful. Mobility is limited, especially in the morning. In the temporomandibular joint, pain often occurs in the ear area or even in the joint region. Pain can extend to the neck and shoulder region. Opening the mouth is difficult or even impossible. Antialgic, anti-inflammatory and miorelaxant drugs are recommended. Passive ankylosis of the temporomandibular joint occurs in spasmophilia, along with Chvostek's and Trousseau's signs.

The temporo-mandibular joint can also be affected by congenital diseases or acquired diseases of traumatic, inflammatory or neoplastic origin, manifested by pain and functional disorders.

Sometimes the oral manifestations involve also the salivary secretion, which may be decreased or absent. The mucosa becomes dry, reddish and swallowing problems occur frequently. Teeth become fragile. The parotid glands and, more rarely, the sub-maxillary and sublingual glands increase in volume.

The III-rd group includes 2 cases (2.05%) with Paget's disease.

Face examination aimed at assessing any increase or decrease in the volume or shape of the skull, the softness or hardness of the face bones. Face will be compared to other regions of the body, such as neck, limbs, chest, in order to find eventual deformities.

History taking aimed at identifying changes in smell, facies, salivary flow and taste. The patient was asked if he was diagnosed with systemic diseases with oral manifestations, such as hemopathy, collagenase, neoplasia or diabetes.

The color of oral mucosa, facial symmetry, the presence of submandibular lymph nodes, increase in volume of the parotid glands and the ease in opening of the oral cavity were also evaluated, according to age, gender and constitutional type of patients.

The complex structure of the oral cavity was thoroughly explored (lips, lip mucosa, the corners of the mouth, gingival labial sulcus, oral vestibule, the internal face of the cheeks, the outer surface of gums, the floor and the ceiling of the oral cavity or the hard and the soft palate).

There was no case of orofacial dyskinesia, manifested as involuntary movements of the face, lips and tongue,

and indicating hypertensive encephalopathy, Wilson's disease, portacaval encephalopathy or substance abuse.

Conclusions

The health status of the body is reflected by the health of the oral mucosa, which can be seen as a *marker* of various systemic diseases.

Oral cavity, the first segment of the digestive tube, can have marked lesions caused by general diseases with oral involvement. These lesions are irritations of the oral mucosa induced by the release of endogenous toxic products from saliva (urea, uric acid, creatinine, ammonia, ammonium carbonate).

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