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THE VALUE OF PARACLINICAL EXAMINATIONS IN ORAL PATHOLOGY IN CHILDREN AND YOUNG PEOPLE WITH SOME BLOOD DISCRASIONS

Mioara DECUSARA[1], Mariana PACURAR[2,*]

[1] "Dunarea de Jos" University of Galati, Galati, Faculty of Medicine and Pharmacy, 47 Domneasca Street, 800008, Galati, Romania
[2] The University of Medicine, Pharmacy, Science, and Technology of Târgu Mureș, Faculty of Dental Medicine, 38 Gh. Marinescu, 540139, Targu Mures, Romania

Abstract

Blood diseases cause changes in oral structures, the analysis, diagnosis and interpretation of which often present particular difficulties for several reasons. Based on these considerations, the aim of the present study is to evaluate a group of patients with blood dyscrasias –all and anemia, in terms of the correlation between disease status and oral manifestations. The study group consisted of 55 children and young people, aged 6-18, hospitalized in the Clinical Hospital for Children in Galati. A control group of 68 children, of the same age and with a similar distribution by sex, selected from the patients examined and treated in two school offices, was used for comparison. Thus, the relative viscosity of the parotid saliva is 1.5 of the submandibular saliva of 3.4 and of the sublingual saliva of 13.4. Viscosity also depends on the amount of mucin, which in turn is inversely proportional to the amount of secreted saliva. In conditions such as blood dyscrasias, the rate of resting salivary flow and the rate of stimulated salivary flow decrease, thus increasing both carioactivity and individual cariogenic risk

Keywords*:* Blood diseases; individual cariogenic risk; diagnosis

Introduction

The interdependence between the pathology of the oral cavity and the general pathology has been reported since ancient times. The literature presents numerous systemic diseases, which begin or evolve with characteristic or common oral symptoms. However, there is no consensus on the pathogenic specificity of systemic factors with specific tissue lesion responses [1].

Although this pathology issue has been debated for a long time, the pathology of the oral cavity - as a reflection of some general diseases - has not been sufficiently deepened.

Considering the body as a whole and considering the increased frequency of oral manifestations during the onset and evolution of general diseases, the practical importance of oral pathological manifestations in the diagnosis, prognosis and therapeutic attitude of certain diseases results .

Blood diseases cause changes in oral structures, the analysis, diagnosis and interpretation of which often present particular difficulties for several reasons [2].

A first consideration is the difficulty of separating the phenomena manifested from the different sectors of the stomatognathic system, given that the examination, diagnosis and treatment of diseases in this system are approached according to the clinical and paraclinical characteristics of integrity and functional convergence, etc. Hard to delimit in reality, it seems

Corresponding author: mariana.pacurar@umftgm.ro

necessary to “artificially” separate local (oral) changes from locoregional and general changes, constantly being aware that, at all these three levels, the evolution of changes is common and with mutual influence [3].

The second consideration starts from the idea that oral manifestations can precede long before the installation and diagnosis of the systemic diseases that caused them. Thus, the oral biological structures will unconditionally suffer the influence of morphological and functional alterations specific to carious processes and their complications, periodontal and mucosal diseases (mucositis) [4].

Dental, periodontal and mucosal changes in the context of blood dyscrasias must be addressed in the bio-psycho-social context in which each case is placed.

Oral complications are often encountered in patients with blood dyscrasias (anemia) and those on anti-cancer therapy. These complications can lead to high morbidity, delayed treatment, reduced doses and nutritional deficiencies [5].

The intensive combination of protocols used in chemotherapy, high-dose chemotherapy and allogeneic bone marrow transplantation have become increasingly used in the treatment of both lymphoproliferative malignancies and solid tumors [6].

Ideally, the chemotherapeutic agent should only destroy the malignant cells. Unfortunately, anti-cancer drugs with such a low effect on normal tissue are not yet available, so some damage to healthy tissue is unavoidable, especially in cases where rapid cell division normally occurs (eg., hair, skin, mucous membranes and hematopoietic system) [7].

The type of chemotherapeutic agents administered, the dosage and the frequency of administration of the drug are important factors of therapy that affect the development of stomatotoxicity [8].

Chemotherapeutic agents that have a high potential for precipitation of oral mucosal lesions are alkylating agents such as daunorubicin, procarbazine, thiotepa; anthracyclines such as cytosine, arabinoside, hydroxyurea, 5-fluorouracil, methotrexate, 6 ¬mercaptopurine and 6-thioguanine; antibiotics such as actinomycin D, amsacrine, bleomycin and mitocin; alkaloids such as vinblastine and vincristine and taxanes. The direct inhibitory effects of chemotherapy by reproducing DNA and proliferating the cellular mucosa result in a reduction in the renewal capacity of the basal epithelium and thus the stomato toxicity of chemotherapy occurs.

These events are thought to result in mucosal atrophy, collagen collapse, and possible ulceration[9]. Chemotherapeutic agents may also cause thrombocytopenia and leukopenia leading to disruption of the patient's hemostatic and immune mechanisms. Thus, chronic pathogenic dental conditions such as periodontal disease and involvement of the dental pulp can lead to acute problems during chemotherapy. Thrombocytopenia may precipitate spontaneous and heavy bleeding of the periodontium, especially in patients with existing periodontal disease [10].

On the other hand, a variety of patient-related factors appear to increase the potential for developing oral complications, including patient age, nutritional status, malignancy, pre-treatment oral conditions, attention during treatment, and pre-treatment neutrophil count. Young patients appear to be at higher risk of developing chemotherapy-induced stomatitis, probably due to a rapid epithelial mitotic rate or the presence of multiple epidermal growth factor receptors[11].

Patients suffering from hematological malignancies, poor pre-existing oral hygiene and periodontal disease, poor nutritional status and low neutrophil count show an increased incidence of oral complications from chemotherapy. A recent study shows that the total incidence of oral complications in children receiving a high dose of chemotherapy is 42% higher than in those children with acute leukemia or Hodgkin's lymphoma [12].

The decrease in salivary secretion rates, due to various physiological or pathological reasons, results in the short-term onset of an acute form of carious disease (cariarampanta) characterized by the appearance of new active caries even on caries-resistant surfaces, the exacerbation of chronic caries. and the appearance of marginal secondary caries [13].

In conditions such as blood dyscrasias, the rate of resting salivary flow and the rate of stimulated salivary flow decrease, thus increasing both carioactivity and individual cariogenic risk.The acute effects of anti-cancer chemotherapy on the oral cavity include: mucositis, infections, bleeding, xerostomia, neurological disorders and nutritional deficiencies [14,15].

Purpose of the study

Based on these considerations, the aim of the present study is to evaluate a group of patients with blood dyscrasias - ALL and anemia, in terms of the correlation between disease status and oral manifestations. In order to reach plausible conclusions about the influences that blood diseases have on oral health as well as the correlations established with age, sex, biological hematological balance, the studies we performed were analyzed in 3 directions.

- o The relationship between leukemia / anemia - mucosal status
- o The relationship between leukemia / anemia - dental status
- o The relationship between leukemia / anemia - periodontal status

Material and methods

The study group consisted of 55 children and young people, aged 6-18, hospitalized in the Clinical Hospital for Children in Galati. A control group of 68 children, of the same age and with a similar distribution by sex, selected from the patients examined and treated in two school offices, was used for comparison(Fig.1).

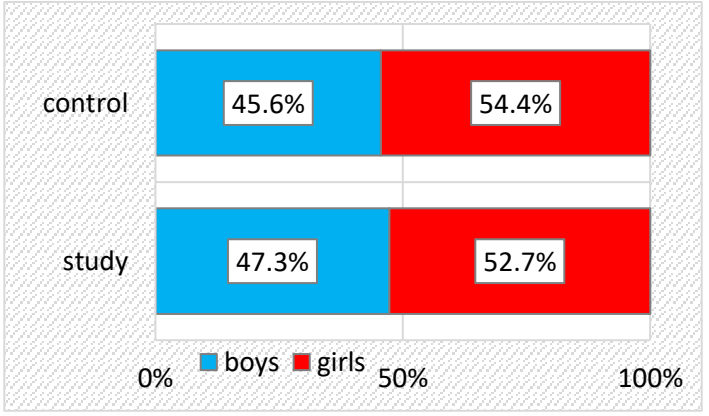

Fig. 1. Distribution of control and study group by sex

In addition to the general condition parameters, these patients also had oral manifestations in the oral mucosa, periodontium and teeth. by clinical and paraclinical examination.

Determination of RFS / RFR

Because the rate of salivary flow is a major parameter in assessing the host's ability to resist cariogenic attack, its quantitative assessment was performed as a usual step in the clinical

examination. The decrease in the rate of stimulated salivary flow, but especially of rest by salivary hypofunction was detected during the anamnesis and the clinical examination, when the patients presented multiple symptoms and subjective and objective signs.

Both RFS and RFR were quantitatively evaluated, normally expecting a modified secretion rate, and saliva having different pH / buffer capacity.

The patient was explained before the procedure the importance of this test, the technique of performing it and the need to do nothing (chewing, brushing, etc.), at least one hour before harvesting.

In the surgery, quiet conditions were ensured, without exogenous influences on the patient, who was placed on a chair in a sitting position, with his head slightly forward.

A graduated glass tube, a funnel, a paraffin cube and a stopwatch were used to perform the test.

To assess the rate of stimulated salivary flow, the following steps were followed:

• Normally caries-preventive RFS is around 1.5 ml / min, the patient having a high cariogenic risk when its value is below 0.7 ml / min.

Results and Discussions

As can be seen, the distribution of the groups is different, the study group being dominated by patients from rural areas, who were examined in hospital, compared to the control group selected mostly from urban areas, depending on the addressability of children in the dentistry surgery (Fig.2).

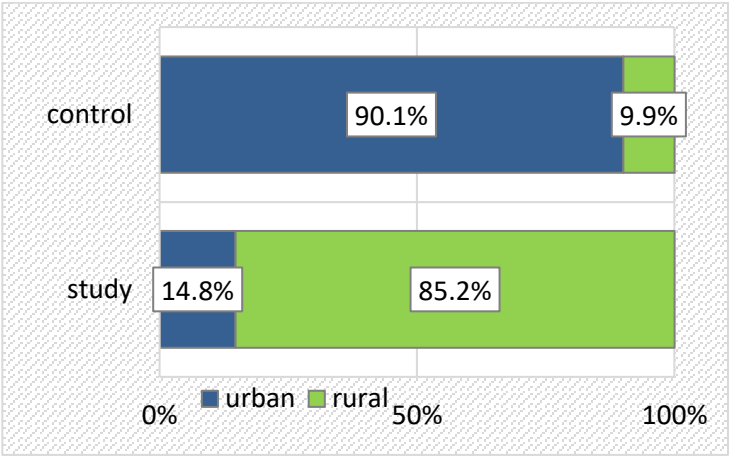

Fig. 2. Distribution according with urban/rural area

Regarding thedistribution of blood disorders pathology by age groups, we notice a prevalence for 12 year, followed by 9 year and 8 year(Fig.3).

In the study group, the saliva was much more viscous and had more foam than the control group. Viscosity and foam are reflected in higher protein levels, and salivary turbidity is related to mucus, oral epithelial cells, and especially the presence of bacteria.

Thus, the relative viscosity of the parotid saliva is 1.5 of the submandibular saliva of 3.4 and of the sublingual saliva of 13.4. Viscosity also depends on the amount of mucin, which in turn is inversely proportional to the amount of secreted saliva. It is important to mention the role of salivary viscosity because a very viscous saliva favors the retention and adhesion of food residues on the tooth surface and in the retentive spaces of the dental arches, thus generating optimal conditions for the onset of carious processes (Fig.4).

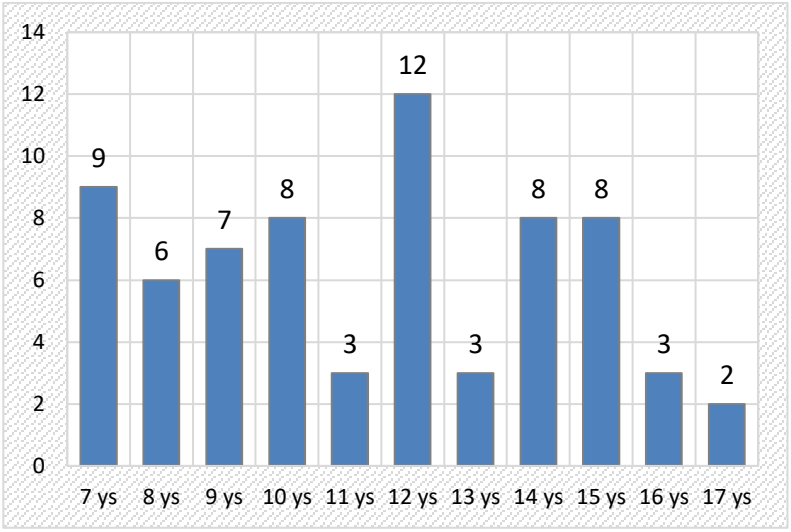

Fig.3. Distribution of patients by age group in the group of patients with blood disorders

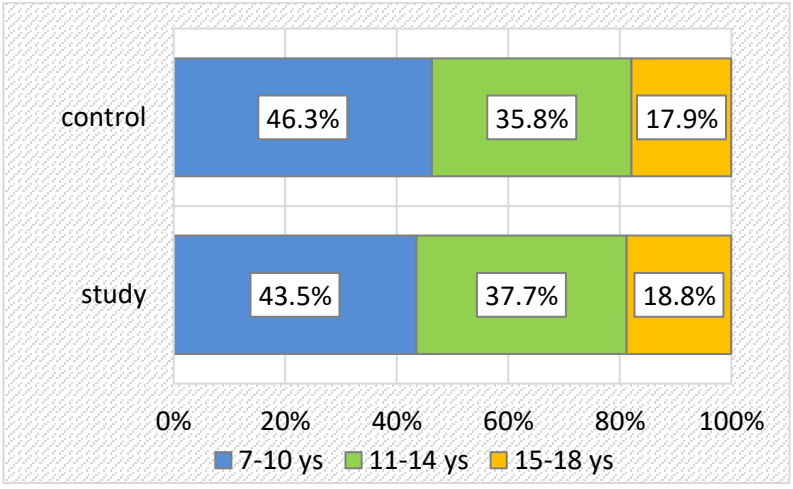

Fig. 4. Salivary buffer capacity values

The recording of resting and stimulated salivary flow recorded the following values (maximum / minimum values): in the control group, the resting salivary flow is 0.67-0.73 ml /

min, with an average value of 0.7, while in the study group the values were lower (0.61-0.68) with an average value of 0.64ml / min.

The stimulated salivary flow also records low values in relation to the values of the control group -0.78-0.99 (average 0.81) ml / min, compared to 1.51-1.55 (average 1.52) ml / min.

Salivary flow, which was significantly decreased ($p < 0.001$), was associated with higher salivary viscosity and foam. Reduced salivary flow denotes global dehydration which can cause irreversible changes in the salivary glands.

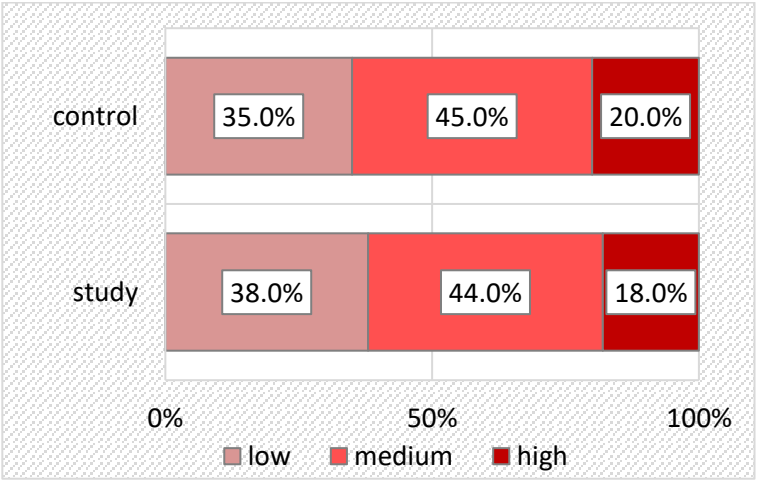

Fig. 5. The determination of salivary pH also shows different values in the 2 groups, both in resting saliva and in stimulated saliva.

The salivary pH in unstimulated saliva is 5.4-6.5 (average wave 5.95) in the study group compared to 6.4-7.0 (average value 6.7) in the control group as pH salivary in saliva stimulated which has an average value of 6.15 (5.6-6.7), compared to 6.9 (6.7-7.1) in the control group.

Acid pH in the study patients may be associated with either microbial activity or a decrease in bicarbonate due to salivary flow.

Conclusions

The purpose of paraclinical examinations is multiple: to identify some forms of disease that do not manifest clinically even before the appearance of clinical signs; to specify the depth and stage of some abnormalities detected at the clinical examination; to confirm or deny a diagnosis based on clinical data; to increase the doctor's confidence in making decisions; to appreciate the efficiency and correctness of the established treatment.

The decrease in salivary secretion rates, due to various physiological or pathological reasons, results in the short-term onset of an acute form of carious disease (cariarampanta) characterized by the appearance of new active caries even on caries-resistant surfaces, the exacerbation of chronic caries. and the appearance of marginal secondary caries.

In conditions such as blood dyscrasias, the rate of resting salivary flow and the rate of stimulated salivary flow decrease, thus increasing both carioactivity and individual cariogenic risk.

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