

MORPHOLOGY OF THE INTERACTION OF DENTURES FROM THE MUCOUS MEMBRANE OF ORAL CAVITY IN INDIVIDUALS WITH INTOLERANT TO ACRYLATES

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Abstract: Using the method of scanning electron microscopy learned the state of the surface of dentures and the oral mucosa in individuals that intolerant to acrylic dentures.

It was found that in case of intolerance to acrylic dentures significant accumulation of microorganisms and their proliferation are determined on the surface of the prosthetics in contact with the oral mucosa.

These microorganisms along with micro trauma of the surface of the oral mucosa may be one of the etiological factors in the development of intolerance to acrylic dentures.

Keywords: morphology, oral mucosa, denture

Relevance. A removable plastic denture should be attributed to complex stimuli of a combined nature. On the one hand, it is a mechanical factor of irritation, in view of the features of its inner surface - porosity, roughness, poor elasticity and

insufficient fixation on the jaws, and also due to the transmission of constant chewing pressure on tissues that are not adapted and do not have a special apparatus for perceiving this pressure and moreover, for its transformation from harmful effects into harmless ones.

On the other hand, the prosthesis also has a chemical effect due to the excretion of its constituent ingredients and the effect on mucous membrane of the oral cavity, and other tissues and body fluids.

In addition, due to the insufficient thermal conductivity of plastic bases and the violation of the heat transfer processes, prostheses have a thermal effect [3,6].

One of the important factors in the action of the prosthesis is its biological effect on mucous membrane of oral cavity .

Due to the fact that an isolated space is formed under the prosthesis, which is favorable for accelerated reproduction of diverse, including virulent, micro flora, the possibility of penetration of microorganisms, their metabolic products, and other protein substances deep into the underlying tissues is enhanced [1,2,4,8].

Inflammatory diseases of the oral cavity, caused by the action of prostheses, the so-called prosthetic stomatopathy, are often found in the clinic of prosthetic dentistry [3,5,6, 7].

Most modern structural and lining materials are not indifferent to the human body. As a result, in 4–11% of cases, patients report unpleasant sensations in terms of perceptual force that turn into intolerance to dentures [9,10].

The cause of inflammatory and allergic reactions in the oral cavity to various materials are microbial associations, in which the clinical manifestations bear the emphasis of one pathogen.

However, the morphology of the interaction of prostheses with mucous membrane of oral cavity is not well understood. The morphological aspects of

the interaction of microorganisms under the prosthetic space with the oral mucosa have not been studied.

The aim of this study was to study the surface of dentures and the mucous membrane of oral cavity in patients with intolerance to acrylic dentures.

Material and methods. For morphological study, excised tissue fragments were fixed in a 10 -12% formalin solution on phosphate buffer by lilly. Paraffin sections stained with hematoxylin - eosin.

Also was investigated fragments of prostheses in patients with manifestations of intolerance to acrylic dentures.

Light-optical micrographs were obtained on a” Biolam I” microscope using an” hp Photosmart R 927” digital camera coupled to the microscope optical system using a special adapter.

For scanning electron microscopy (SEM), the preparations after the fixation described above were subjected to dehydration in alcohol-acetone, then dried by the critical point method in an HCP-2 apparatus and sprayed with gold in an IB-2 apparatus. Investigated in a “Hitachi S405A” electron microscope.

Photographing was performed using a “Canon” digital SLR camera from a microscope monitor screen.

Microphotographs were computer-processed on a” Pentium IY” computer using “Windows Professional”.

The results of the study. Morphological studies of mucous membrane of oral cavity in the area of the prosthetic bed in patients with manifestations of intolerance to dentures showed significant changes in the mucous membrane. They consisted in thickening of the epithelial lining, mainly due to the prickly layer, moderately pronounced acantholysis. In the basal layer, an increase in basophilia and an increase in the number of mitoses are noted. Quite significant manifestations of acanthosis - submersible growths of the epidermis in the dermis.

Significant inflammatory changes are noted in the dermis, which consist of edema and severe inflammatory infiltration, mainly by round-cell elements such as lymphocytes (Fig. 1).

When investigating mucous membrane of oral cavity using SEM in the area of the prosthetic bed, some unevenness and uplift of the relief are revealed. Epithelial cells have a different shape. In some areas, gaps are determined. Desquamated keratinized cells are detected on the surface (Fig. 2). In this group of patients, microorganisms, blood cells, fibrin, and other pathological overlays are not detected on the surface of the mucous membrane of oral cavity .

In patients with intolerance to acrylic dentures, a more pronounced unevenness of the micro relief with the presence of deep gaps and protrusions is noted. Accumulations of detritus and microorganisms are detected in these crevices. Microorganisms and detritus are also determined on the surface of the mucous membrane of oral cavity (Fig. 3).

SEM studies of the surface relief of used prostheses made of plastic "ethacryl" in patients with intolerance to prostheses reveals smooth edges of the ridges. On the surfaces of the prosthesis in contact with mucous membrane of oral cavity, accumulations of homogenous material deposits are determined, especially in the recesses of the surface.

At high magnifications, it can be seen that plaque is a net, rather homogeneous formation, with separate discrete particles (Fig. 4).

At high magnifications, it was clearly revealed that plaque is an accumulation of discrete bodies of microorganisms, which are sticks and cocci (Fig. 5).

Typical colonies form in separate areas of the accumulation of microorganisms, mainly rods, (Fig. 6). In some areas, microorganisms are so densely packed that it is difficult distinguish the substrate of the prosthesis.

Using SEM at high magnifications, it is clearly visible that these raids consist mainly of discrete microbial bodies, mainly rods. In some areas, the surface of the prosthesis appears smooth.

Studies have shown that with intolerance to acrylates, characteristic morphological changes in the mucous membrane of oral cavity take place. These changes take place both in the epithelial lining and in one's own connective tissue layer (dermis). The most pronounced manifestation of stomatitis is the presence in the dermis of inflammatory infiltrates consisting of lymphocytes and acanthosis.

SEM shows uplift of the relief, loss of symmetry, pronounced desquamation of dead cells.

Thus, in case of intolerance to acrylates on the surfaces of prostheses in contact with mucous membrane of oral cavity, significant accumulations of microorganisms and their rapid proliferation are determined.

These microorganisms, along with microtraumas of the surface of mucous membrane of oral cavity, are probably one of the etiological factors in the development of intolerance to acrylic dentures.

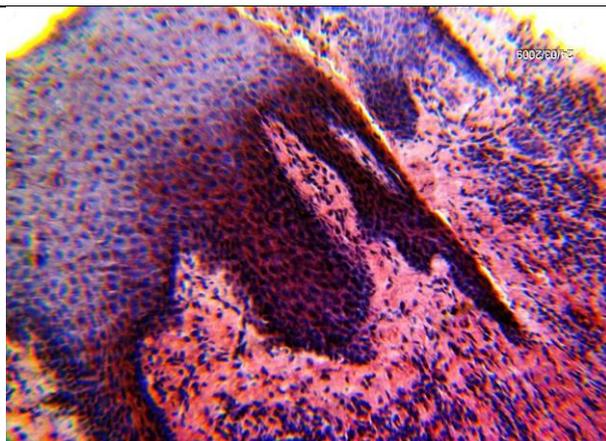


Fig. 1

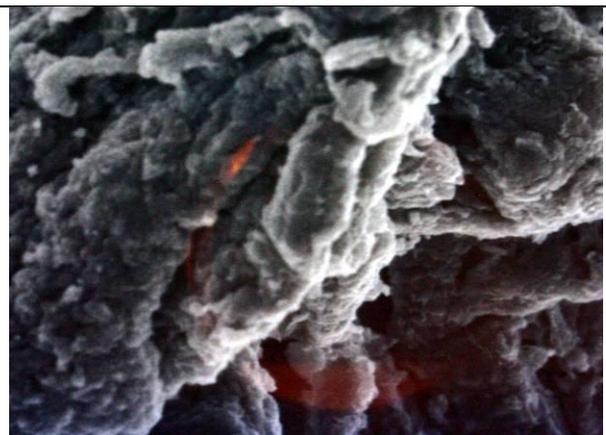


Fig. 2

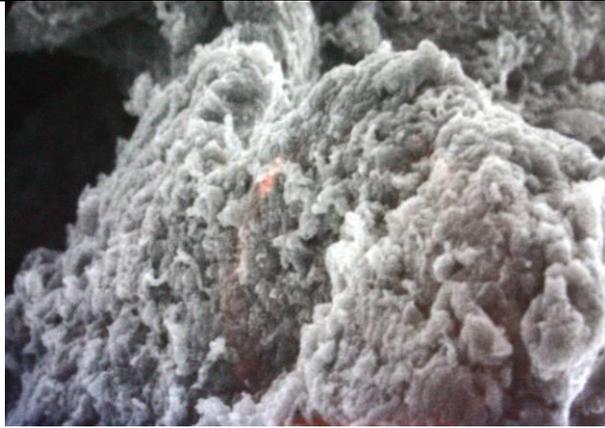


Fig. 3



Fig. 4



Fig. 5



Fig. 6

Fig. 1. Severe lymphoid infiltration of the connective tissue base of mucous membrane of oral cavity with intolerance to acrylic prostheses. G-e. 10x10.

Fig. 2. Moderate uplift of the microrelief of , the absence of overlays on the surface without manifestations of mucous membrane of oral cavity intolerance to prostheses. SEM x400.

Fig. 3. Significant overlays on the surface of mucous membrane of oral cavity with intolerance to acrylic dentures. SEM x 400.

Fig. 4 A fragment of the used prosthesis (ethacryl) in a patient with intolerance to acrylic prostheses. Accumulations of homogeneous substance over the entire surface. SEM x 1000.

Fig. 5. The accumulation of microorganisms on the surface of the prosthesis in a patient with intolerance to acrylic prostheses. SEM x 2000.

Fig. 6. Cocci bacilli on the surface of the prosthesis in a patient with intolerance to acrylic prostheses. SEM x 4000.

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