CASE STUDY

Use of bioresorbable plates on the basis of collagen and digestase for treatment of diseases of oral mucosa (review of clinical cases)

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Abstract

Mucosa, which lines oral cavity, is adapted to constant contact with irritating factors. It is resistant to action of mechanical, physical, and chemical irritants and to contact with rich flora of oral cavity. However, 3–5% of population have various diseases of oral mucosa (OM). Pathology of OM can develop in response to the action of pathogenic microorganisms, viruses, and various traumatic factors; it can be a result of pathology of viscera and systems of a person. The article describes four clinical cases of the use of bioresorbable plates on the basis of collagen and digestase "Farmadont" for the treatment of chronic recurrent aphthous stomatitis, traumatic stomatitis, and gingivostomatitis which is caused by herpesvirus (herpes simplex).

Key words: Collagen, digestase, plates "Farmadont," oral mucosa, chronic recurrent aphthous stomatitis, trauma of oral mucosa, herpetic stomatitis

INTRODUCTION

Oral cavity is called a mirror in which the general condition of organism is reflected. Oral mucosa (OM) is the place where early sings of many infectious and non-infectious, acute and chronic, and specific and non-specific processes manifest themselves.[1,2]

Pathology of OM can develop in response to the action of pathogenic microorganisms, viruses, and various traumatic factors; it can be a result of pathology of viscera and systems of a person.[3,4]

Mucosa, which lines oral cavity, is adapted to constant contact with irritating factors. It is resistant to the action of mechanical, physical, and chemical irritants and to contact with rich flora of oral cavity. However, 3–5% of population have various diseases of OM.[5,6]

The most frequent ones are chronic recurrent aphthous stomatitis K12.0 (CRAS), traumatic stomatitis K.12.1, and gingivostomatitis which are caused by herpesvirus (herpes simplex) B00.2.

Today, an important principle of therapy of OM diseases is complexity. Principle of complexity means that a general treatment and a local one are conducted. Local

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treatment includes (1) elimination of local traumatizing factors (removal of dental calculus, grinding-off of sharp tooth edges, and replacement of a defective denture); (2) anesthesia which enables normal food intake and speech; (3) prevention of infection of erosions and ulcers and thereby creation of conditions for epithelization; (4) stimulation of processes of epithelization of erosions, fissures, and ulcers; (5) elimination of dysbacteriosis of oral cavity; (6) intensification of processes of phagocytosis and regeneration; (7) use of surgical intervention in case of irreversible changes (excision of chronic fissures, excrescences); and (8) orthopedic treatment for restoration of normal function of dentofacial system. Necessity arises to create and synthesize such medicinal preparations which would cover all aspects of local treatment and influence all components of pathogenesis of OM diseases.[6,7]

In the last years, the complex preparations are created in which biomaterials are combined with other medicinal substances. They have a wide spectrum of anti-inflammatory action due to their complex composition; therefore, they increase the effectiveness of therapy and the sphere of their use is widened. Among these, biocompositions are bioresorbable collagenic plates "Farmadont," a complex preparation on the basis of collagen and extracts of medicinal plants.[8,9]

These preparations are rectangular collagenic plates which are impregnated with extracts of medicinal plants (aloe, St. John's wort, plantain, camomile, valerian, and arnica); their composition includes also digestase, a complex of proteolytic enzymes. During contact with moist mucosa, the plate begins to absorb saliva and to gradually change into a gel, thereby adhering to mucosa surface. The plate secures retention of medicinal substances exactly on the point of their application; it also protects inflammatory focus from aggressive influence of environment. Release of digestase and extracts of plants takes place. Prolongation of action is determined by the period of disintegration of plates in oral cavity; this disintegration lasts for from 45 min to 2 h. The plate gradually dissolves and releases active components; it need not be removed.[10,11]

CRAS can accompany stomach troubles. Persons of both genders, who range in age from 20 to 60 years, can have this disease. Its polyetiology must be mentioned. Aphthous stomatitis can be caused by allergic reactions (to microbial, viral, medicamental, and alimentary influences), by dysfunctions of gastrointestinal tract, respiratory infections, and traumas of OM. An important role in recurrence of pathologic process is played by provocative factors: Mistakes in diet, functional disorders of central nervous system and vegetative nervous system, intake of medicaments, chronic somatic diseases, hypovitaminoses and avitaminoses, and nidi of focal infections.[12,13]

One of the mechanisms of formation of aphthae is development of a local autoallergic reaction: Antibodies can by mistake attack epithelial cells of mucosa because their antigenic structure is similar to allergens; therefore, it leads to necrosis.[12,14]

Results of various researches reveal that healing of aphthae takes place on average after 5–7 days, depending on size of lesion focus and on severity of disease course.[15-17]

Objective of our research is to evaluate effectiveness of the use of bioresorbable plates on the basis of collagen and digestase for the treatment of various diseases of OM.

MATERIALS AND METHODS

We have conducted a clinical dental research in the hospital "Clinic of Doctor Agarkova;" this research included examination and treatment of patients having the diagnosis "CRAS," "traumatic stomatitis," and "gingivostomatitis which is caused by herpesvirus [herpes simplex] [Table 1]."

RESULTS AND DISCUSSIONS

The results of our study are demonstrated in the following clinical cases.

Table 1: Criteria according to which the patients were included/not included/excluded into/from the research

Criteria according to which the patients were included into the research	Criteria according to which the patients were not included into the research	Criteria according to which the patients were excluded from the research
Presence of a patient's written informed consent to participation in the research	Inappropriate age group	Patient's refusal to further participate in the research
Age group 35–65 years	Pregnancy, breastfeeding	Pregnancy
Men and women		Violation of doctor's recommendations or stages of medical check-up
Presence of inflammatory diseases of tunica mucosa oris		

Clinical Case No. 1

Patient D is a 51-year-old female. She visited a dental polyclinic and complained about painfulness and burning during food intake.

Objective results: An aphtha is detected on mucosa of internal surface of cheek on the right, on the level of closure of teeth, the aphtha has dimensions 3 mm × 5 mm [Figure 1] and smooth borders, it is covered by a fibrinous layer and has a bright hyperemia and an edema on periphery; it is painful while being palpated [Figure 2]. Submandibular lymph nodes on the right have dimensions 1.0 mm × 1.0 mm, they are movable, painless.

Diagnosis: K12.0 CRAS.

Therapy: Antiseptic treatment by miramistin solution 0.01% was conducted, application of trypsin to lesion focus for 20 min. Application of a collagenic plate [Figure 3]. Physiotherapy is prescribed: Ultraviolet irradiation no. 5 of aphtha area according to regimen. For 5 days, the patient also applied the collagenic plate "Farmadont" before going to bed.

Figure 1: Photometry of aphtha (dimensions 3 mm × 5 mm)

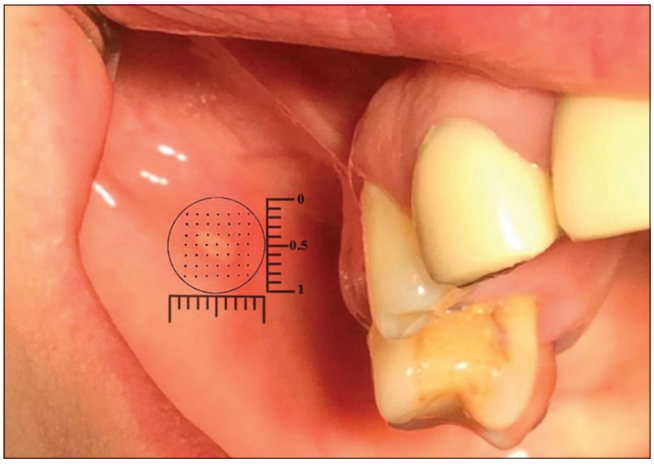

Figure 2: Aphtha on mucosa of cheek

At the beginning of the 2nd day of research, all sensations of pain were sharply reduced, on the 4th day, no fibrinous layer was observed and full epithelization of focuses of injuries had taken place. Mucosa got a normal pale-pink color, it is moist; sings of rash are totally absent [Figure 4].

Clinical Case No. 2

Patient S is a 65-year–old female. She visited the dental polyclinic and complained about painfulness and burning on the lower jaw in region of frontal teeth during food intake.

Objective results: An aphtha is detected on mucosa of vestibule of mouth, the aphtha has dimensions 3.5 mm × 5 mm [Figure 5] and smooth borders, it is covered by a fibrinous layer and has a bright hyperemia and an edema on periphery; it is painful while being palpated [Figure 6]. Submandibular lymph nodes on the right have dimensions 1.0 mm × 1.0 mm, they are movable, painless.

Diagnosis: K12.0 CRAS. There is information about diabetes mellitus, insulin-dependent form in patient record.

Figure 3: Application of a collagenic plate "Farmadont" to area of aphtha

Figure 4: Sings of rash are totally absent

Figure 5: Photometry of aphtha (dimensions 3.5 mm × 5 mm)

Figure 6: Aphtha on mucosa of vestibule of mouth

Therapy

Antiseptic treatment by miramistin solution 0.01% was conducted, application of trypsin to lesion focus for 20 min. Application of a collagenic plate [Figure 7]. Physiotherapy is prescribed: Ultraviolet irradiation no. 5 of aphtha area according to regimen. For 5 days, the patient also applied the collagenic plate "Farmadont" to area of aphtha 3 times a day after meals and before going to bed.

At the beginning of the 2nd day of research, all sensations of pain were sharply reduced, on the 5th day, no fibrinous layer was observed and full epithelization of focuses of injuries had taken place. Mucosa got a normal pale-pink color, it is moist; sings of rash are totally absent [Figure 8].

Clinical Case No. 3

Patient N is a 50-year–old female. She visited the dental polyclinic and complained about painfulness and burning in region of hard palate during food intake. During history taking, it was found out that over a long period the food was getting

Figure 7: Application of a collagenic plate "Farmadont" to area of aphtha

Figure 8: Sings of rash are totally absent

stuck between the patient's last teeth on the upper jaw on the left. The patient removed food debris by toothpicks and conducted self-treatment (applied the cotton wool tampons with Corvalol).

Objective results: Lesion focus 12 mm × 10 mm is detected on mucosa of hard palate on the left, the focus is covered by a fibrinous layer and has an edema and hyperemia on periphery, and it is painful while being palpated.

Diagnosis: K12.1 traumatic stomatitis, chemical burn of hard palate on the left.

Therapy: Antiseptic treatment by miramistin water solution 0.01%, application of trypsin to lesion focus for 20 min. During the first 2 days of treatment, the applications of keratoplastic drugs were used: Indomethacin and Methyluracil ointment in the form of alternation of applications to lesion focus for 20 min each. Treatment by collagenic plates "Farmadont" was conducted at home for 5 days; the patient applied 1 plate to lesion focus 2–3 times a day after food intake and before going to bed. On the 5th day of treatment, an active epithelization of lesion focus was observed, fibrinous layer

was absent. Painfulness and burning were reduced already on the 3rd day of treatment. Full healing of lesion focus took place on the 7th day [Figures 9 and 10].

Additional examinations were conducted: A contact intraoral roentgenogram. The image shows the root of the tooth 2.7 which remained after a traumatic extraction of the tooth 2.7. The tooth 2.8 is medially displaced toward the tooth 2.6 (Godon-Popov phenomenon) that was the cause of gathering of food debris between the teeth. The patient was sent to a dental surgeon for consultation.

Figure 9: Chemical burn of hard palate on the left

Figure 10: Healing of lesion focus on the 7th day

Clinical Case No. 4

Patient K is a 35-year–old female. She visited a dentist 1 day after a vent-plant had been placed, she complained about slight pains in area of operative wound, about prickling during intake of irritating food and about bleeding sickness during tooth brushing.

During examination, the operative wound with the placed vent-plant is observed in oral cavity, wound edges are quiet. Mucosa of marginal gingiva is unchanged but punctuated multiple erosions are found on it from the buccal and lingual side, they have dimensions 2 mm × 2 mm, a fibrinous layer and crown of hyperemia on periphery [Figure 11a and b].

Diagnosis: B00.2 acute focal herpetic gingivitis

Therapy: Antiseptic treatment of marginal gingiva by miramistin solution 0.01%, treatment of marginal gingiva by Zovirax. Application of a collagenic plate [Figure 12]. For 4 days, the patient also applied the plates 2–3 times a day on her own after food intake and before going to bed. The patient felt a significant improvement on the 2nd day of treatment when sense of discomfort in area of the operative wound and bleeding sickness had disappeared. Final healing of erosions took place on the 4th day counted from start of treatment [Figure 13].

CONCLUSION

1. This series of clinical cases allows to objectively evaluate effectiveness of inclusion of collagenic plates

Figure 11: (a and b) acute focal herpetic gingivitis

Figure 12: Application of a collagenic plate "Farmadont" to lesion focuses

Figure 13: Final healing of erosions

"Farmadont" in the treatment of various diseases of OM: Chronic recurrent aphthous stomatitis, traumatic stomatitis, and gingivostomatitis which is caused by herpesvirus [herpes simplex]. Periods of healing of mucosa lesions are considerably shortened, and subjective painful sensations are reduced during treatment already from the 2nd day.

2. Use of collagen as a basis of pharmaceuticals is determined by its features: Absence of toxic and cancerigenic properties, hydrophilism, ability to easily create complexes with many medicinal substances, and ability to fully dissolve in organism.
3. Combination of antibacterial, anti-inflammatory, wound healing, and anesthetic substances in the collagenic plates "Farmadont" secures a complex influence on inflammatory diseases of OM that allows to use them in cases of acute processes and in cases of exacerbation of chronic processes on OM.
4. During the use of the plates "Farmadont," no cases of local irritative and allergenic effect on OM were revealed.
5. Method of introduction of active substances from the plates "Farmadont" is a promising trend in dentistry and deserves a special attention due to an accurate dosing of application to OM over a long period.

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