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EVALUATION OF THE RESULTS OF COMPLEX THERAPY FOR POST-TRAUMATIC OSTEOMYELITIS IN MANDIBULAR FRACTURES

Pulatova Sh.K.
PhD, Assistant Asian International University,
Bukhara, Uzbekistan, Department of Dentistry
e-mail: pulatova.shaxzoda@bsmi.uz
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Relevance. The most common complication of mandibular fractures is post-traumatic osteomyelitis, which accounts for 10 to 30% of cases. Analysis of the literature and numerous clinical and expert observations show that factors contributing to the development of post-traumatic osteomyelitis include the presence of teeth with foci of chronic infection in the fracture line, late seeking of specialized medical care by patients with mandibular fractures, as well as deficiencies in medical care at various stages of treatment. At the present stage, it is particularly relevant to highlight issues related to the clinical characteristics of mandibular fractures complicated by post-traumatic osteomyelitis, which aggravates the course of the mandibular fracture and leads to an increase in treatment duration, thereby exacerbating the harm caused to human health [Günter V.E., Khodorenko V.N., Chekalkin T.L. et al., 2018].

The term “post-traumatic osteomyelitis” refers to purulent inflammation of all elements of the bone resulting from trauma. It is a nonspecific purulent-necrotic infectious-allergic inflammatory process in the area of the mandibular fracture, accompanied by necrosis of the wound surfaces of the fragments with the formation of sequestra and regeneration of bone tissue. At the same time, post-traumatic osteomyelitis of the mandible represents a qualitatively new form of the inflammatory process, in which necrosis occurs in areas of bone that showed no signs of damage and are located at a certain distance from the fracture line; self-cleaning of the wound and healing without prolonged specialized treatment do not occur.

Most researchers associate the induced pathomorphosis of purulent inflammation with both changes in the etiological structure of pathogens and their properties, and with disturbances in the immune status of the body. Currently, the development of inflammation is noted under the influence of resident flora from odontogenic foci and individual pathogens that potentially possess virulence, invasiveness, and toxicity. An expansion of the species spectrum of pathogens has been observed, where resident and pathogenic infections combine with a sequential change in the dominance of aerobic, obligate anaerobic, and facultative anaerobic organisms. However, it should not be forgotten that the development of an infectious-inflammatory process is determined not only by the relationship “microbial pathogen – immunity,” but also by all physiological systems of the body. The very probability of developing an infectious process, the features of the clinical course, and the prognosis largely depend on the factors that determine these relationships [Efimov Yu.V., Efimova E.Yu., Dolgova I.V., 2016].

Taking into account the above information regarding the complicated clinical course of mandibular fractures, the problem of diagnosis and optimization of complex treatment of post-traumatic osteomyelitis of the mandible remains relevant to this day.

Keywords: post-traumatic osteomyelitis, pathogenic microflora, sequestrum, immunological reactivity of the body.

Aim of the study — to investigate the advantages of combined treatment of post-traumatic osteomyelitis in patients with mandibular fractures.

Materials and methods. Based on a detailed analysis of literature data and the results of the conducted studies, the most common complaints in patients with purulent-inflammatory complications of mandibular fractures are: pain, swelling, weakness, anxiety, sleep and appetite disturbances, fever, as well as deterioration of the patient's general condition.

One of the factors in the development of traumatic osteomyelitis of the mandible is untimely, namely delayed, provision of specialized care. During the examination, it was revealed that out of 157 patients included in the study groups, 68.3% of patients were admitted to the hospital on the first day after the injury, 24.5% — after 3 days, 5.2% — after 4–8 days, 1.8% — after 9–30 days, and 0.2% — after an interval of more than 30 days. It was noted that the vast majority of patients with developed post-traumatic osteomyelitis (92.8%) sought specialized care within 3 days after the injury; 7% of patients were hospitalized at later periods — from 4 days to 1 month. Due to untimely immobilization of mandibular fragments in the fracture area, a purulent-inflammatory process developed. The source of purulent infection was a tooth with necrotic pulp or a pathological process in the periapical tissues. In cases of emergency elimination of the infection focus in the initial stage of traumatic osteomyelitis of the mandible against the background of properly selected anti-inflammatory therapy and reliable fixation of the fragments, the pathological process was arrested.

From many years of experience in treating patients with mandibular fractures, it can be concluded that traumatic osteomyelitis of the mandible is accompanied by suppression of the body's immunological reactivity.

Therefore, in the main group of patients, traditional therapy for complications of mandibular fractures was supplemented with the use of Traumeel-S ointment and physiotherapeutic procedures in the form of infrared radiation, which help reduce local signs of trauma and activate tissue regeneration. Patients who received combined therapy demonstrated a significant reduction in inflammatory processes and improvement in general condition after just a few sessions. These methods not only accelerate the healing of bone tissues but also contribute to the restoration of normal microflora of the oral cavity, reducing the number of pathogenic microorganisms. Thus, infrared radiation as the main component of treatment, supplemented with Traumeel-S ointment, should be recommended for widespread use in clinical practice to improve the effectiveness and quality of treatment of complications of mandibular fractures.

Results. Analysis of the results of the special treatment of patients in the main group with osteophlegmons and post-traumatic osteomyelitis of the mandible showed that the reduction or complete cessation of pronounced exudation observed on days 2–4 after opening the purulent focus was noted already on days 4–5 of complex therapy. Reduction in the intensity of the pain symptom or its relief was noted on days 3–4; tissue infiltration in the inflammation foci decreased from day 2, and in most patients by day 5 there was a reduction in wound size due to the processes of granulation formation and epithelialization.

Using the data obtained as a result of pathogenetic therapy, it was established that in patients with traumatic injuries of the mandible, the frequency of purulent-inflammatory complications is significantly increased by 1.9%; in the development of complications of mandibular fractures, a significant quantitative increase in gram-positive cocci Staphylococcus aureus, Staphylococcus epidermidis, Streptococcus spp., Peptostrepto-coccus spp. was observed compared to normal values; with an increase in the duration of the disease, it was proven that changes in the microflora intensify, which leads to an unfavorable prognosis of trauma complications;

the role of reduced content of local immune factors in the oral cavity, including lysozyme, phagocytic activity of neutrophils, and sIgA, in the development of complications of mandibular fractures was shown, and it was proven that they are the main cause of an increase in the number

of pathogenic microorganisms and an unfavorable prognosis of purulent-inflammatory complications; it was shown that the recommended complex treatment of mandibular fractures allows a sharp reduction in the percentage of complication development, a reduction in the length of hospital stay to 3 days, and complete restoration of bone tissue regeneration.

Thus, the use of Traumeel-S ointment enhanced the effect of infrared radiation, contributing to the reduction of local signs of trauma and activation of tissue regeneration. Patients who received combined therapy demonstrated a significant reduction in inflammatory processes and improvement in general condition after just a few sessions. These methods not only accelerate the healing of bone tissues but also contribute to the restoration of normal microflora of the oral cavity, reducing the number of pathogenic microorganisms. Infrared radiation as the main component of treatment, supplemented with Traumeel-S ointment, should be recommended for widespread use in clinical practice to improve the effectiveness and quality of complex treatment of mandibular fractures.

Conclusions:

Delay in providing specialized medical care to victims with mandibular fractures, as well as irrational tactics regarding teeth located in the fracture line, contribute to the development of purulent-inflammatory complications in the form of post-traumatic osteomyelitis and osteophlegmons.

The development of the above complications is most often observed in male patients of young and mature, i.e., the most able-bodied age, which represents a problem not only of a medical but also of a social nature.

Since one of the main causes of post-traumatic osteomyelitis and osteophlegmons of the mandible is a decrease in the activity of general nonspecific immunity factors, complex pathogenetic therapy should be aimed at increasing them.

References:

1. Amro A., Samsonov V.V., Grebnev G.A. et al. Features of the clinical picture of mandibular fractures in different age periods. Bulletin of the Russian Military Medical Academy. 2012. No. 4 (40). P. 49–51.
2. Günter V.E., Khodorenko V.N., Chekalkin T.L. et al. Medical materials and implants with shape memory. Medical materials with shape memory. Vol. 1 / Tomsk: MIC Publishing House, 2011. 534 p. In the World of Scientific Discoveries, Vol. 10, No. 5, 2018.
3. Devdariani D.Sh., Kulikov A.V., Bagnenko A.S. et al. Choice of osteosynthesis method for high fractures of the mandibular condylar process. Bulletin of the North-Western State Medical University named after I.I. Mechnikov. Vol. 9, No. 1. 2017. P. 54–58.
4. Dolgova I.V. Prevention of traumatic osteomyelitis of the mandible: abstract of the dissertation for the degree of Candidate of Medical Sciences. Volgograd, 2013.
5. Epishev A.M. Effectiveness of treatment of mandibular fractures using the method of bone-subperiosteal osteosynthesis with dialysis of the bone wound. Science Yesterday, Today, Tomorrow. – 2016. – No. 3 (25). – P. 23–29.
6. Efimov Yu.V., Efimova E.Yu., Dolgova I.V. Traumatic osteomyelitis of the mandible. Palmarium Academic Publishing, 2016.
7. Efimov Yu.V., Stomatov D.V., Porojskiy S.V. et al. Use of bone suture in oblique mandibular fractures. Volgograd Scientific-Medical Journal. 2015. No. 1. P. 53–55.
8. Kozlov P.Yu. Retrospective analysis of mandibular fractures in the area of the condylar process according to the data of the Department of Maxillofacial Surgery of the State Clinical Hospital // Materials of the VII Russian (final) scientific-practical conference with

international participation of students and young scientists "Avicenna-2016": in 2 volumes. Novosibirsk: Sibmedizdat NGMU, 2016. Vol. 2. P. 266–268.

9. Kopetsky I.S., Prityko A.G., Polunina N.V., Nasibullin A.M. Traumatism of the maxillofacial region (50-year observation experience). Bulletin of the Russian State Medical University. 2010. – No. 2. – P. 31–34.
10. Lastovetsky A.G., Lebedev M.V., Averyanova D.A. Frequency and structure of traumatic injuries of the cerebral and facial skull in victims of road traffic accidents. Proceedings of Higher Educational Institutions. Volga Region. Medical Sciences. – 2014. – No. 3 (31). – P. 106–118.
11. Lebedev M.V. Improvement of the organization of specialized maxillofacial care for victims of road traffic accidents. Proceedings of Higher Educational Institutions. Volga Region. Medical Sciences. – 2016. – No. 4 (40). – P. 94–99.