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Short Communication

Aspects of maxillar osteomyelitis in patients who had COVID-19 in Uzbekistan

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ABSTRACT

It is known to all, that Covid-19 has spread around the world in the last 1.5 years and has become a medical, economic and social problem 1. The occurrence of complications is increasing as the incidence of the infection increases. In Uzbekistan, many patients with this disease have severe complications such as maxillofacial defects and osteomyelitis within 6–8 months of the end of the acute infectious period, forcing patients to undergo long-term treatment. In the clinical case described in the article, osteomyelitis of the maxillofacial bone was observed in a patient with Covid-19 disease. The process was protracted, there were low signs of acute inflammation, the earliest period of sequestration was 6–8 months, the process continued after sequestration at the margins of the healthy bone. In many cases, the ineffectiveness of treatment due to co-morbidities (diabetes, arterial hypertension), microcirculatory, metabolic, immune and other disorders in the patient, the long course of the process is observed.

Dear Editor,

It is known to all, that Covid-19 has spread around the world in the last 1.5 years and has become a medical, economic, and social problem [1]. The occurrence of complications is increasing as the incidence of the infection increases. In Uzbekistan, many patients with this disease have severe complications such as maxillofacial defects and osteomyelitis within 6–8 months of the end of the acute infectious period, forcing patients to undergo long-term treatment. In the clinical case described in the article, osteomyelitis of the maxillofacial bone was observed in a patient with Covid-19 disease. The process was protracted, there were low signs of acute inflammation, the earliest period of sequestration was 6–8 months, the process continued after sequestration at the margins of the healthy bone. In many cases, the ineffectiveness of treatment due to co-morbidities (diabetes, arterial hypertension), microcirculatory, metabolic, immune, and other disorders in the patient, the long course of the process is observed.

1. Case presentation

58-year-old male was admitted to the multidisciplinary clinic of the Tashkent Medical Academy with the diagnosis: “Chronic Osteomyelitis of the maxilla. Chronic perforated sinusitis of the right side. Necrosis of the hard palate”, «c/record 604/15».

According to the disease history, he considers himself ill since September 10, 2020. At the beginning of September 2020, the patient first experienced symptoms of loss of sense of smell and taste, headache, frequent fatigue, and a rise in body temperature up to 39–40 0C. The patient did not go anywhere at that moment and self-treated at home using antipyretic, anti-inflammatory, and antibacterial drugs for 7 days. However, treatment was not effective and the patient’s condition worsened, with chest pains, increased shortness of breath, sweating, general weakness, loss of appetite, so the patient called an ambulance and was hospitalized to the regional infectious clinical hospital. After clinical and laboratory examination, the patient was diagnosed with the

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Fig. 1. Palate osteomyelitis, 3 months later after COVID-19.

main disease: Covid-19 of moderate degree, bilateral pneumonia. (confirmed in PCR, later in IFA). And concomitant diseases: diabetes mellitus type 2. The patient received comprehensive conservative treatment for 17 days. Treatment consisted of the following: insulin therapy according to the scheme, anticoagulant therapy: heparin sodium 10000 units 4 times a day subcutaneously, then Enoxaparin sodium 0.4 ml 2 times a day subcutaneously, antiviral therapy: Ribavirin 200 mg according to the scheme, antibiotic therapy: Ceftriaxone 1 g 2 times a day i/m (5 days), then Cefepim 1 g 2 times a day i/m (12 days), in parallel Moxifloxacin 250 ml i/v once a day. Methylprednisolone 1000 mg according to the scheme, Ambroxol 1 capsule 3 times a day, and antipyretic drugs. After the therapy, the patient's condition improved, and he was discharged from the hospital, was under the home care of a neurologist and ENT doctor. Two days later, the patient felt discomfort in the region of the hard palate, after examination by the ENT doctor, a small wound in the region of the hard palate in the form of necrosis was detected. 16 teeth were obtained by a local dentist due to pain and movement. A recommendation was prescribed (daily rinsing of the oral cavity with an antiseptic solution). While staying at home, the patient had a severe headache on the right side irradiating to the right eye. After examination by a neurologist, ENT doctors, dentists prescribed recommendations - symptomatic therapy (NSAIDs). Since then, the swelling has appeared on the outside of the upper jaw and in the mouth, near the nostrils from time to time. The development of the process was followed by the movement of other teeth in the upper jaw for months. The patient presented with general weakness, headache, and pain in the upper half of the head with persistent swelling of the upper jaw and eye decreased sensitivity of the alveolar bone and necrosis, loss of healthy teeth. In this regard, the patient applied to the multidisciplinary clinic of TMA, where he was hospitalized after a complete examination in the Adults' ENT and Maxillofacial Surgery department with the following main diagnosis: "Chronic Osteomyelitis of the maxilla. Chronic perforated sinusitis of the right side. Necrosis of the hard palate. Concurrent: Diabetes mellitus type 2, arterial hypertension type 2. Concomitant: Coronary heart disease. Condition after bilateral Covid-19 pneumonia.

The patient underwent several examinations and outpatient treatment. The patient was found to be free of other viruses (AIDS, herpes, Zika virus, cytomegalovirus, etc.) and infectious diseases (trauma, tuberculosis, toxoplasmosis, etc.), traumatic processes, odontogenic inflammatory foci, and conditions that cause osteomyelitis.

From the inside of the mouth in the alveolar process of the upper jaw on the right side, the gingiva is absent, alveolar bone is bared, bone color is yellowish-cyanotic, during this period 13–18 teeth are missing, the root of tooth 16 is connected to the upper jaw with a dental broach, in other areas, the gum mucosa is not red, no swelling, mucosa does not show signs of acute inflammation. Pathological displacement of the bone of the hard palate (sequestration separation) was observed after 6 months, on palpation, a bone area of about 5.5*3.5 cm has a slight displacement of 1–2°. (Figs. 1 and 3). On the left side of the nose there is linear edema, redness of the skin, and pain on palpation, no exophthalmos of the right eye, there is soft tissue edema, the consistency is soft.

MSCT examination revealed destruction of the right maxillary jaw bone and total shadowing of the maxillary sinus on the right side (Fig. 2).

On histological examination, inflammation and necrosis of the vascular wall, thrombosis, soft tissue homogenization, lymphocytic, and leukocyte infiltration were observed.

In the blood analysis, during follow-up, leukocytosis decreased from 17.3*109 to 06*109. ESR changed from 28 mm/h to 10 mm/h. Hemoglobin was 112 g/L, erythrocyte count was below the norm of 4.0*1012, the color index was 0.8. During the observation, C-reactive protein (CRP), rheumatoid factor (RF) fibrinogen, the amount of which remained above normal. PTT, INR, D-Dimer prothrombin time normalized. The blood calcium was 1.71 μmol/L in the initial examination and increased to 2.21 μmol/L during treatment.

Immunological examination revealed an increase in T-cytological lymphocyte activation, mainly $CD8^{+}$, $CD16^{+}$, $CD23^{+}$, $CD95^{+}$ -apoptosis factor, immunoglobulin G concentration, decreased index of immunoregulation (CD4/CD8) to 1.0, CIC levels were within normal limits.

Bacteriological examination of the patient's wound revealed several types of staphylococcus, streptococcus, *Escherichia coli*. Antibiotics were selected based on sensitivity to the microflora. Despite the intensive or intermittent, regular antibacterial, anti-inflammatory, anticoagulant, angioprotective vitamin therapy, insulin therapy, hormone therapy, and symptomatic treatment, the process deepened and continued. The patient was treated regularly and systematically with antiseptic solutions - chlorhexidine solution, 3% hydrogen peroxide solution, solcoseryl dental adhesive paste, chlorhexidine ointment on the wounds of the oral cavity.

January 14, 2021 Patient underwent right-sided maxillary sinusoidectomy and sequestroectomy under general anesthesia. However, partial opening of the sutures was observed, purulent discharges were

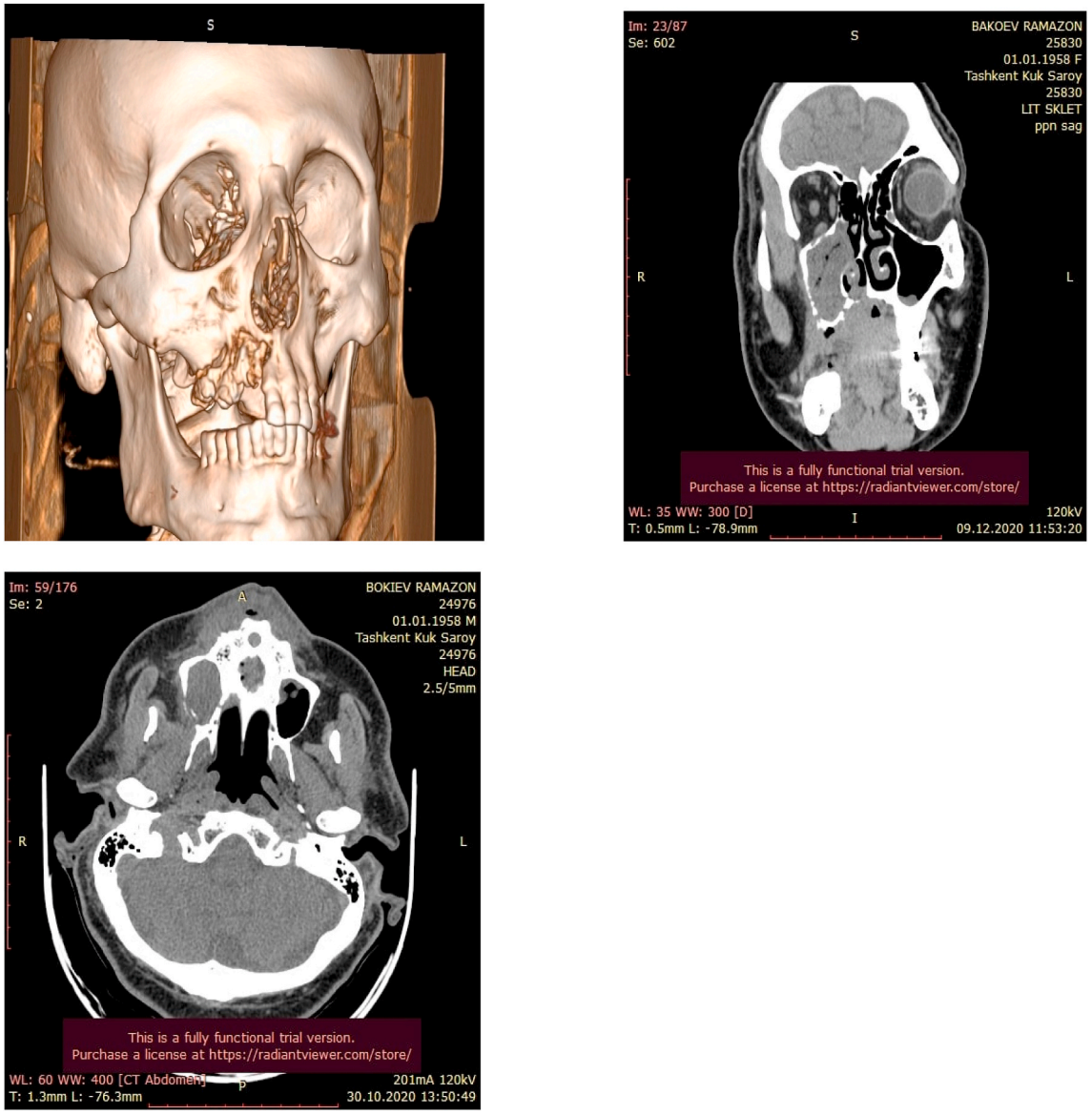

Fig. 2. MSCT examination. 3 D, coronal, axial projection. Jaw destruction, hyperplasia of the mucous membrane of the main sinus on the left, ethmoid cells.

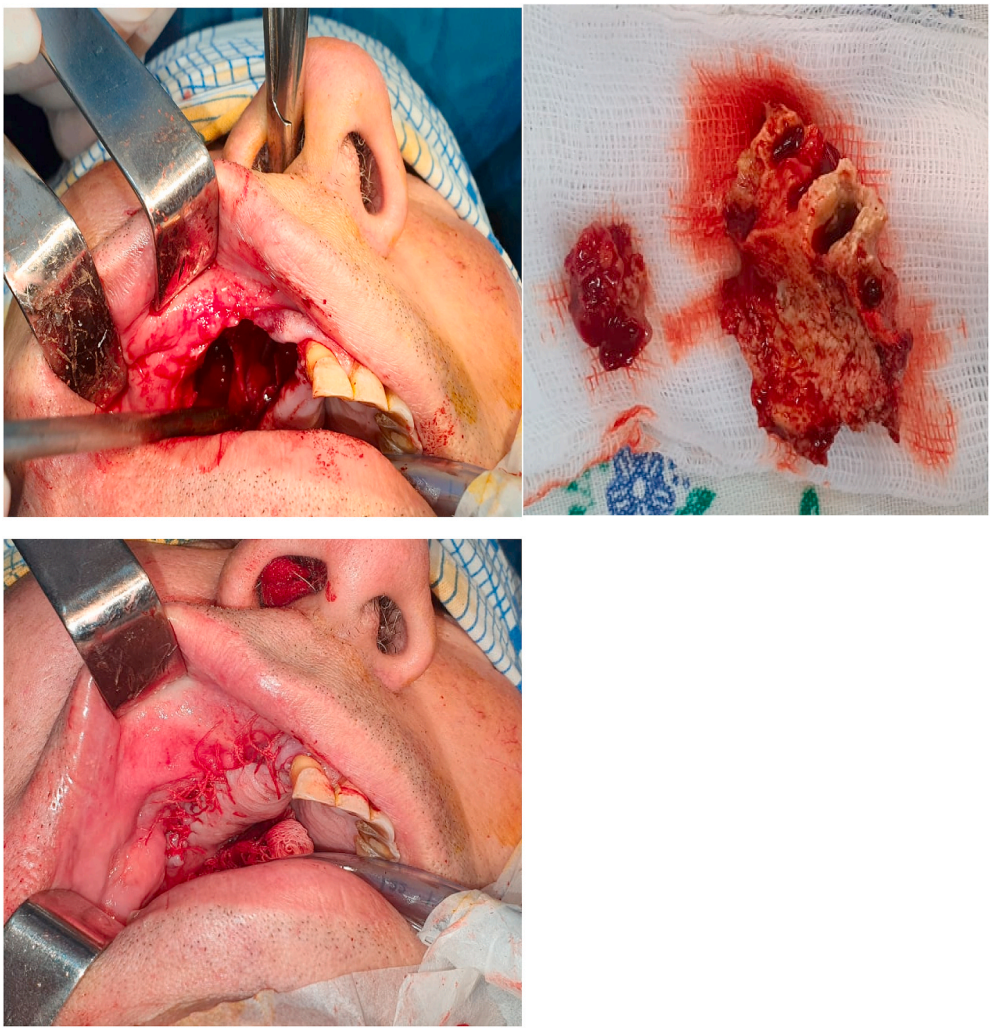

Fig. 3. Operation sinusoidectomy and sequestroectomy.

Fig. 4. 1 month after surgery. A temporary dentures was placed until the process stopped.

absent. (Fig. 3) A temporary protective plate was placed on the nose to reduce the flow of food, to continuously affect the surface of the defect with ointment, and to replace the lost teeth (Fig. 4).

2. Discussions

Signs and changes in the oral cavity and maxillofacial area in patients with coronavirus have been reported by several scientists [2]. Most of them are limited to ulcerative and other types of stomatitis, petechiae, erithema, nodules, rashes, enanthema, white spots on the palate, tongue, lips and acute or chronic sialoadenitis. However, it has been reported that patients with Covid-19 have developed osteomyelitis of other bones (foot, palm, umbilical cord) [3.4]. The presence of local vascular thrombosis, microcirculatory, metabolic, immune system disorders, the presence of concomitant diseases in patients contribute to the development of the process. Besides, the development of jaw osteonecrosis due to corticosteroids, antirheumatic drugs, bisphosphonates or their interaction has been observed [5,6].

3. Conclusion

Maxillofacial osteomyelitis in COVID-19 patients has a very long-term course, with predominant chronic progressive and atrophic processes. In almost all cases, due to metabolic disorders in the maxillary bone, the effectiveness of complex treatment was found below. In many cases, as we have seen in the above patient, the ineffectiveness of treatment requires the strengthening of rehabilitation measures aimed at improving the general condition of patients, then reconstruction of the defects. However, we must not forget about the side effects of drugs, (corticosteroids, immunodepressants, interleukin-6 receptors inhibitors) in the treatment of patients in the early and late stages of the disease.

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