Case report

MedInform

DOI: 10.18044/MEDINFORM.2024112.1841

ISSUE 2, 2024

# A patient with a severe odontogenic inflammatory process, treated in the conditions of bacterial resistance - a case report

**Konstantin Dimov[1], Rayna Yurukova[1], Emil Klein[1],**

**Assya Krasteva[2], Rossen Kolarov[1]**

1.UMBAL "St. Anna", Sofia

2. Faculty of Dental medicine, Medical university - Sofia

## Abstract

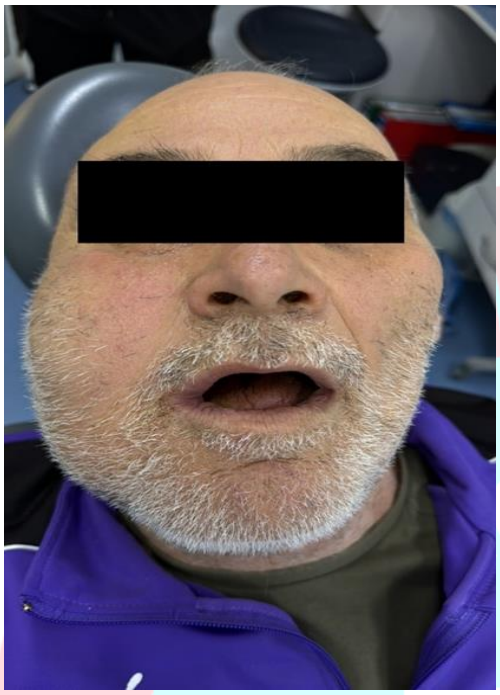
It is clear that severe inflammatory diseases in the maxillofacial region represent a challenge for every clinician. Complications during their course can be fatal. In the conditions of bacterial resistance, a case that increasingly limits the opportunities for adequate behavior of practicing clinicians, using a multidisciplinary approach in drawing up a treatment plan is crucial.

We present a patient with severe phlegmon, covering several adjacent lodges in the maxillofacial region. He was treated at the Maxillofacial Surgery Clinic of St. Anna UMBAL - Sofia. A complex treatment was carried out in the conditions of bacterial resistance.

***Keywords: abscess, phlegmon, bacterial resistance, maxillofacial area***

## Introduction

Maxillofacial surgery is a medical surgical specialty with a multidisciplinary nature. It deals with a group of surgical diseases in which the use of surgery is mandatory or potentially possible. Covers surgical diseases of the face, facial and jaw bones, skin and soft tissues of the head and underlying bony structures, neck, oral



cavity and border areas of the pharynx. It requires the knowledge, technical skills and judgment necessary for adequate diagnosis and treatment of surgical diseases in the maxillofacial and cervical region. (1,2,6,7)

The scientific base requires in-depth knowledge of anatomy, physiology, imaging, organ functional diagnostics, invasive studies, preoperative assessment, postoperative nutrition and care, intensive care, trauma, oncology, neurosurgery, etc. (1,2,6,8,9)

In this sense, the specialty studies large groups of diseases. These are: maxillofacial purulent-septic surgery, maxillofacial traumatology, oncology, reconstructive surgery, etc.

Purulent-septic maxillofacial surgery is part of them and includes the diagnosis and treatment of:

- inflammatory diseases of the soft tissues of the face, head, neck and oral cavity;
- inflammatory diseases of the bones (osteomyelitis and periostitis) and necroses of a different nature of the jaw and facial bones;
- odontogenic and non-odontogenic sinusitis, lymphadenitis, exacerbated cysts;
- inflammatory diseases of the skin of the face and neck, etc.

Inflammatory diseases occupy the largest part of the treated patients in the clinics and wards of Maxillofacial surgery in the country - 41%. (8,9,10) This indicates that this pathology requires a systemic approach. Further more, the facts related to the presence of bacterial resistance should be taken into account. (3,4) The dental health of the population is not at the required level. In addition, the population in our country is aging, a large part of people have chronic diseases that require a multidisciplinary approach in carrying out their necessary treatment, etc.

The quality of medical services provided is of fundamental importance, and modern medicine is based on evidence. (5,11)

Everything presented above is a reason to present every clinical case in the treatment of seriously ill patients with surgical diseases in the Maxillofacial region.

We present to you a patient treated for a severe inflammatory disease in the maxillofacial region at the Maxillofacial Surgery Clinic of St. Anna UMBAL – Sofia

## Case description

Patient A.T., 56 years old, was admitted to the Clinic with a diagnosis: phlegmon on the cheek, temporal, infratemporal, pterygomandibular and parapharyngeal lobules on the right.

Anamnesis: Pacient A.T. at the age of 56, entered the Maxillofacial clinic of UMBAL "St. Anna" with complaints of inability to open the mouth, difficulty swallowing, severe pain and swelling in the area of the lower jaw on the right, general weakness, fatigue and high fever.

He reports that about a month and a half ago pain appeared in the second premolar on the right. An extraction followed. A few hours later, pain and swelling appeared in the right mandibular region. An oral antibiotic was

prescribed by the dentist (Clindamycin 2x600mg). The swelling increased and the patient was sent to St. Anna's Hospital.
Systemic diseases: Arterial hypertension.
Somatic status: Male of visible calendar age, non-contact, inadequate. Confused. Febrile (37.8 C)

**Local status:**

Extraoral:Visible asymmetry due to edema involving buccal, submandibular, retromolar region with firm consistency, no evidence of fluctuation. The skin is red and hyperemic. It is painful on palpation. The local temperature is elevated. Enlarged cervical lymph nodes at all levels on the right. The nasolabial fold is smoothed.
Intraoral: Trismus 2nd to 3rd degree. The mucous membrane is red, hyperemic, the mucobuccal fold of the upper and lower jaw is obliterated, the tongue is whit white greasy coating. From the alveolus of the extracted second premolar tooth oozes thick brown pus with a strong unpleasant smell. During palpation, fluctuation is detected. The uvula is shifted to the left
On admission, blood was taken for tests. The same tests have been carried out and monitored over time.

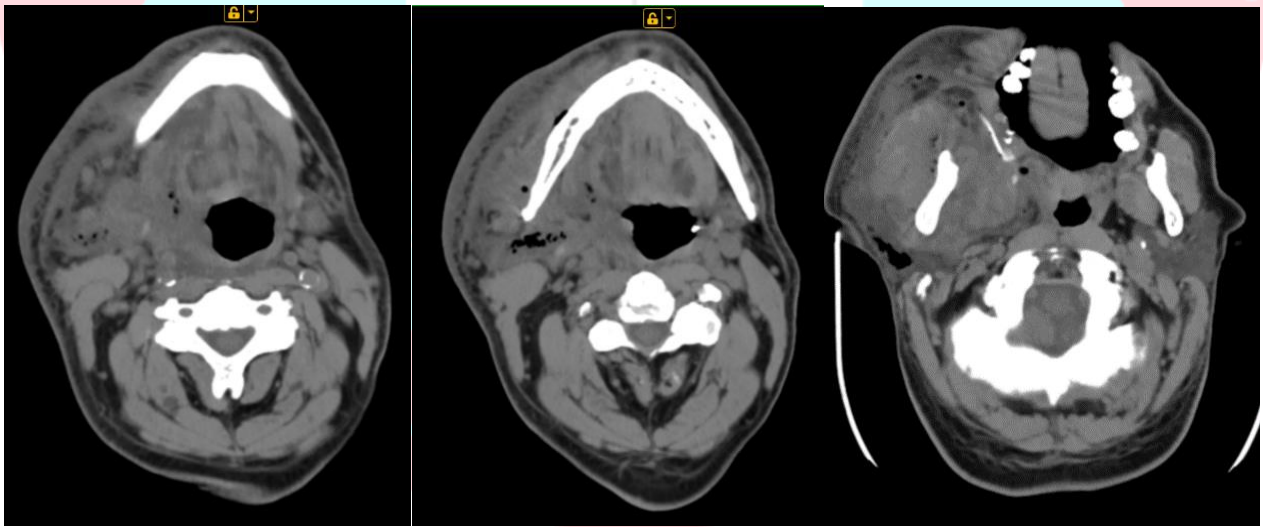
| Изследване | Резултат | Мерна единица | Реф. граници |
|---|---|---|---|
| 021000 ВИСОКОСПЕЦИАЛИЗИРАНИ ИЗСЛЕДВАНИЯ | | | |
| **021001 С реактивен протеин** | | | |
| CRP | 125.4 | mg/L | 0 - 6 |
| 022000 ХЕМАТОЛОГИЧНИ ИЗСЛЕДВАНИЯ | | | |
| **022003 Кръвна картина , автоматично, с диференциално броене** | | | |
| Левкоцити (WBC) | 27.14 | *10^9/l | 3.5 - 10.5 |
| Лимфоцити (Lym) # | 0.62 | *10^9/l | 1.3 - 4 |
| Моноцити (Mo) # | 0.92 | *10^9/l | 0.5 - 1 |
| Гранулоцити (Gran) # | 25.52 | *10^9/l | 3.5 - 5.5 |
| Еозинофили (Eo) # | 0.03 | *10^9/l | 0.00 - 0.50 |
| Базофили (Bas) # | 0.05 | *10^9/l | 0.00 - 0.14 |
| Лимфоцити (Lym) % | 2.3 | % | 20 - 40 |
| Моноцити (Mo) % | 3.4 | % | 0 - 10 |
| Гранулоцити (Gran) % | 94.0 | % | 40 - 70 |
| Еозинофили (Eo) % | 0.1 | % | 0 - 6 |
| Базофили (Bas) % | 0.2 | % | 0 - 1 |
| Еритроцити (RBC) | 5.17 | *10^12/l | 3.8 - 5.5 |
| Хемоглобин (HGB) | 153.0 | g/L | 140 - 180 |
| Хематокрит (HCT) | 48.2 | % | 40 - 54 |
| MCV | 93.2 | fL | 80 - 96 |
| MCH | 29.6 | pg/L | 27 - 32 |
| MCHC | 317.0 | g/L | 320 - 360 |
| RDW-CV | 14.3 | % | 11 - 16 |
| RDW-SD | 47.9 | fL | 35 - 56 |
| Тромбоцити (PLT) | 460.0 | *10^9/l | 140 - 440 |
| MPV | 9.3 | fL | 6.2 - 12 |
| PDW | 10.7 | | 9 - 17 |
| PCT | 0.427 | % | 0.108 - 0.285 |
| CRP | | mg/L | 0 - 6 |
| 023000 КРЪВОСЪСИРВАНЕ И ФИБРИНОЛИЗА | | | |
| **023003 Протромбиново време** | | | |
| INR | 1.43 | {INR} | |
| 025000 КЛИНИКО-ХИМИЧНИ ИЗСЛЕДВАНИЯ | | | |
| **- Изследване** | | | |
| Глюкоза - серум | 8.23 | mmol/L | 2.8 - 6.4 |
| Калий | 4.0 | mmol/L | 3.5 - 5.5 |
| Креатинин - серум | 132.0 | µmol/l | 74 - 133 |

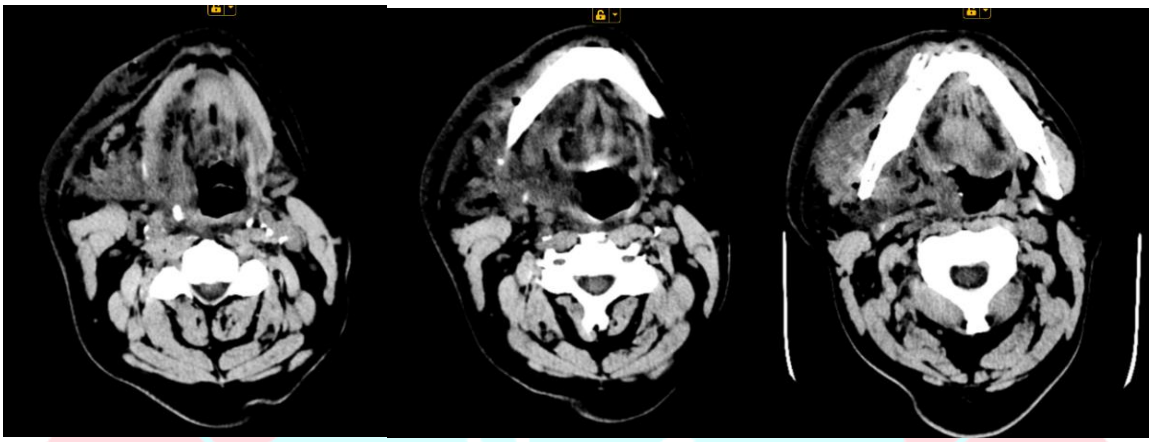
**Radiography - orthopantomography.**

Remnants roots are observed on the lower jaw on the left and on the right and on the upper jaw on the right. Extraction wound at the region of the second premolar.

**CT OF THE HEAD AND NECK, NATIVE AND CONTRAST STUDY from 30.11.2023:**

Multifocal, confluent fluid collections with density of exudate and air inclusions are distinguished in the right masticatory space, buccally and submandibular, as superior with infiltration of right temporalis superficialis muscle.
Left-sided deviation of the pharynx, caudally liquid collections are traced in the right parapharyngeal and visceral space.
Induration of the soft tissues of the right facial area.
Conclusion: Multifocal, abscessing inflammatory process of the right facial and neck region.





Material was taken for antibiogram:
Isolated microorganism - Enterococcus faecalis
Antibiogram:
- AMC Amoxicillin-clavulanic acid: 25 [S]
- AM Ampicillin: 10 [R]
- SAM Ampicillin-sulbactam: 21 [S]
- CIP Ciprofloxacin:
- E Erythromycin:
- LVX Levofloxacin: 18 [S]
- LNZ Linezolid: 28 [S]
- RA Rifampin:
- TEC Teicoplanin: 18 [S]
- TGC Tigecycline:
- SXT Trimethoprim-: 10 [R]
- VA Vancomycin: 18 [S]
- DOX Doxycycline:

**TREATMENT**

Surgical treatment:
After thorough cleaning of the operative field, an incision was made under local infiltration anesthesia at the punctum maximum of the inflammation, in the area of the buccal mucosa on the right. A blunt hemostatic instrument was used to penetrate deep into the inflammation and a large quantity of thin, greenish, strongly malodorous pus was drained. Drains were inserted.
Every day, the incisional wounds were flashed in the morning and in the evening with oxygenated water and Brounol.

Medicated:
Amoxicillin - 1200 mg/20 ml, DOSE 1200 mg - iv - 3 times a day,
Metronidazole - 500 mg/100 ml, DOSE 500 mg - iv - 3 times a day,
Selemycin 250 mg/ml - 500 mg/2 ml, DOSE 500 mg - iv - once,
Natrium Chlorid 0.9% Baxter glass - 0.900 g/100 ml, DOSE 100 ml (0.900 g) - iv - 3 times a day,

EFLORAN 5 mg/ml - 500 mg/100 ml, DOSE 500 mg - iv - 3 times a day,
Ultravist 769 mg/ml - 76,900 g/100 ml, DOSE 76,900 g - ia - single,

On the fifth day of the stay in the clinic, a spontaneous fistule occurred - extraorally in the region of the body of the mandible.
Amikacin (1 g in the morning) was added to the therapy.
After 10 days of intravenous antibiotic combined therapy, an improvement of the patient's condition was observed. No complications were noted. The patient was discharged with improving state and remained under outpatient supervision.

20 days after discharge, the patient was again admitted for re-hospitalization. He came with complaints of pain and swelling similar to the previous ones and in the same area. He also reported hearing loss and paretic manifestations in the area of the upper lip and corner of the mouth on the right.
The objective condition showed a discrete paresis of the corner of the mouth on the right. A minor amount of whitish pus oozed from the old incisional wounds.

Blood tests on re-admission

| 022000 ХЕМАТОЛОГИЧНИ ИЗСЛЕДВАНИЯ | | | |
|---|---|---|---|
| **022003 Кръвна картина , автоматично, с диференциално броене** | | | |
| Левкоцити (WBC) | 8.54 | *10^9/l | 3.5 - 10.5 |
| Лимфоцити (Lym) # | 1.19 | *10^9/l | 1.3 - 4 |
| Моноцити (Mo) # | 0.48 | *10^9/l | 0.5 - 1 |
| Гранулоцити (Gran) # | 6.81 | *10^9/l | 3.5 - 5.5 |
| Еозинофили (Eo) # | 0.05 | *10^9/l | 0.00 - 0.50 |
| Базофили (Bas) # | 0.01 | *10^9/l | 0.00 - 0.14 |
| Лимфоцити (Lym) % | 13.9 | % | 20 - 40 |
| Моноцити (Mo) % | 5.6 | % | 0 - 10 |
| Гранулоцити (Gran) % | 79.7 | % | 40 - 70 |
| Еозинофили (Eo) % | 0.7 | % | 0 - 6 |
| Базофили (Bas) % | 0.1 | % | 0 - 1 |
| Еритроцити (RBC) | 4.06 | *10^12/l | 3.8 - 5.5 |
| Хемоглобин (HGB) | 117.0 | g/L | 140 - 180 |
| Хематокрит (HCT) | 36.8 | % | 40 - 54 |
| MCV | 90.7 | fL | 80 - 96 |
| MCH | 28.9 | pg/L | 27 - 32 |
| MCHC | 318.0 | g/L | 320 - 360 |
| RDW-CV | 14.2 | % | 11 - 16 |
| RDW-SD | 46.4 | fL | 35 - 56 |
| Тромбоцити (PLT) | 406.0 | *10^9/l | 140 - 440 |
| MPV | 9.4 | fL | 6.2 - 12 |
| PDW | 10.8 | | 9 - 17 |
| PCT | 0.38 | % | 0.108 - 0.285 |
| CRP | | mg/L | 0 - 6 |
| **022008 СУЕ** | | | |
| СУЕ | >140 | mm/h | 0 - 15 |
| 025000 КЛИНИКО-ХИМИЧНИ ИЗСЛЕДВАНИЯ | | | |
| **025011 Глюкоза** | | | |
| Глюкоза - серум | 4.8 | mmol/L | 2.8 - 6.4 |

From the studies conducted, it appears that CRP rises rapidly after the onset of infection and subsides almost immediately after the infection is under control, while ESR rises significantly more slowly and remains high even after the infection subsides.

Isolated microorganism from the repeated antibiogram - Streptococcus mitis

1/1 Раневи секрет
Спесимен: Рана
• Организъм - Streptococcus mitis
К-во:
Оценка:
Антибиограма
- AN Amikacin:
- AMC Amoxicillin-clavulanic acid:
- AM Ampicillin: 6 [R]
- SAM Ampicillin-sulbactam: 25 [S]
- MA Cefamandole:
- CZ Cefazolin:
- FEP Cefepime: 30 [S]
- CTX Cefotaxime:
- FOX Cefoxitin:
- CAZ Ceftazidime:
- CRO Ceftriaxone: 25 [S]
- CF Cephalothin:
- CIP Ciprofloxacin:
- CLR Clarithromycin:
- CC Clindamycin: 6 [R]
- E Erythromycin:
- GM Gentamicin:
- IPM Imipenem:
- LVX Levofloxacin: 25 [S]
- LNZ Linezolid:
- MEM Meropenem:
- MXF Moxifloxacin:
- OX Oxacillin:
- TZP Piperacillin-tazobactam:
- RA Rifampin:
- TEC Teicoplanin: 20 [S]
- TGC Tigecycline:
- VA Vancomycin: 20 [S]
- CXM Cefuroxim:
- CFP-S Sulbactam cefoperazone:
- SXT Trimethoprim sulfamethoxazole: 25 [S]
- DOX Doxycycline:

Surgical treatment

Remnants roots were extracted in the 1st and 4th quadrants

Mucobuccal fold incision was made and new microbiology tests were conducted. Installed corrugated drain and flushes in the morning and evening with oxygenated water and brounol.

Initiated therapy with Vancomycin (2x1000mg), Clindamycin (4x1)

With this treatment, the condition of patient A. T. improved rapidly and on the fifth day after admission he was discharged in good general and local condition. At a follow-up examination after a week, his condition was good - he has recovered.

## Conclusion

From the case presented, it is clear that severe inflammatory diseases in the maxillofacial region represent a challenge for every clinician. Complications during their course can be fatal. In the conditions of bacterial resistance, a case that increasingly limits the opportunities for adequate behavior of practicing clinicians, using a multidisciplinary approach in drawing up a treatment plan is crucial.

In these cases, surgical treatment should be the leading, the first and mandatory choice - early incision and removal of the etiological factor - the tooth causing the disease. In second place is the timely administration of antibiotic treatment. It should be targeted, following an antibiogram.

In this case, it was crucial that within the window from collecting the material for microbiological examination until the time the result was released, treatment targeting aerobic and anaerobic microflora was already initiated .The same gave a good result regarding anaerobic flora - soon after the treatment started, the clinical signs of anaerobic infection disappeared.

However, failure to control the primary infection in its entirety has triggered a secondary one in the same area with other pathogenic microorganisms.

## References

1. Anastasov, K. Surgical dentistry. Medicine and physical education, 1979 (in Bulgarian).
2. Bakardzhiev, A. Oral surgery in dental medicine, 2011(in Bulgarian).
3. Boyanova, L., R. Kolarov, I. Mitov. Antimicrobial resistance and the management of anaerobic infections. Source of the Document Expert Review of Anti-Infective Therapy, 2007; 5,4,685-701(in Bulgarian). (ISSN 1478-7210)

4. Boyanova, L., R. Kolarov, G. Gergova, et al. Trends in antibiotic resistance in Prevotella species from patients of the University Hospital of Maxillofacial Surgery, Bulgaria, in 2003-2009. Source of the Document Anaerobe, 2010; 16, 5, 489-492(in Bulgarian). (ISSN 1075-9964)
5. Lohr, K. N.Guidelines for Clinical Practice: Applications for Primary Care. Int J Qual Health Care, 1994; , 6, 1, 17-25.
6. Kolarov, G. Propedeutics of surgical dentistry. Medicine and Physical Education, 1984(in Bulgarian).
7. Kolarov, R. et al. Medical standard for maxillofacial surgery.Ordinance No. 23 of the Ministry of Health, 2002 (in Bulgarian).
8. Kolarov, R. Clinical Pathways in Maxillofacial Surgery. Medical Management and Health Policy, 2006;4(in Bulgarian).
9. Kolarov R. Clinical pathways in maxillofacial surgery. Ed. of Medical University "Prof. Dr. Paraskev Stoyanov" - Varna ISBN 978-619-221-068-7(in Bulgarian).
10. Kolarov, R. Structure of morbidity in Maxillofacial Surgery. Medical Review, 2017;6. (ISSN 1312-2193)
11. Reason, J. Human Errors: Models and Management. BMJ, 2000;18, 768-770.

## Corresponding author:

Rossen Kolarov
UMBAL "St. Anna" - Sofia
tel.: 0888940885
email: rossen.kolarov@gmail.com



Dimov K, Yurukova R, Klein E, Krasteva A, Kolarov R. A patient with a severe odontogenic inflammatory process, treated in the conditions of bacterial resistance - a case report. Medinform 2024; 11(2):1841-1848.