

Combined treatment by antibiotic therapy and surgery of chronic mandibular osteomyelitis: a case report

Daniel Humberto Pozza¹

Nelson Ribeiro Neto²

João Batista Macedo Sobrinho³

Jean Nunes Santos⁴

João Batista Blessmann Weber⁵

Marília Gerhardt de Oliveira⁶

Abstract

Chronic osteomyelitis of the mandible is usually a difficult pathology to resolve. Treatment has included long-term antibiotics and surgical debridement, aggressive in some cases. This paper reports a 54-year-old female with an eight-month mandibular chronic osteomyelitis who was successfully treated with the combination of medication and surgical intervention.

Keywords: osteomyelitis; oral surgery; clindamycin; mandible

INTRODUCTION

Osteomyelitis is an inflammatory process - acute, sub-acute or chronic - which reaches the medullar spaces and/or the osseous corticals and might extend from the original place, arising usually from an odontogenic infection, among others. The osseous spaces are usually filled with exudates, which can lead to pus formation. Chronic osteomyelitis can be the result of a non-treated acute mild inflammation or emerge without a precursor. When osteomyelitis happens in the mandible, it is usually more diffuse and widespread.¹⁻⁵

This infection usually affects bones such as sternum, clavicles, ribs, spinal bones, pelvis, as well

as the peripheral long bones. Involvement of the mandible alone occurs less frequently. In the mandible, it can be found as a single lesion or multiple lesions.⁶⁻⁸

Clinical examination alone is enough to diagnose chronic mandibular osteomyelitis due to the progression of this disease. Computed tomography is the preferred imaging method, since it presents advantages over conventional methods, such as the possibility of visualizing soft tissues and multiplanar reconstruction. Bone scintigraphy can also be used to detect the initial inflammation, and magnetic resonance imaging can be used to check for

¹ Doctor in Dentistry. Laboratory of Laser. School of Dentistry - UFPB/UFBA. João Pessoa - PB / Salvador - BA

² Doctoral Student - Laboratory of Laser. School of Dentistry - UFPb/UFBA. João Pessoa - Pb / Salvador - BA. Specialist in CTBMF - UFCE. Fortaleza - CE. Specialist in Implantodontology - EAP/ABO/BA. Salvador - BA

³ Doctor in Dentistry. Laboratory of Laser. School of Dentistry - UFPB/UFBA. João Pessoa - PB / Salvador - BA. Professor and Coordinator of the Specialization Course in CTBMF - CEBCO. Salvador - BA

⁴ Doctor in Oral Pathology. Adjunct Professor and Titular of Laboratory of Pathologic Anatomy. School of Dentistry - UFBA. Salvador - BA

⁵ Doctor in CTBMF. Adjunct Professor of Pediatric Dentistry - PUCRS. Porto Alegre - RS

⁶ Titular Professor of the School of Dentistry, PUCRS. Porto Alegre. Productivity Scholarship Holder- CNPq

Correspondência para/Correspondece to:

Daniel Humberto Pozza

Av. Lucas de Oliveira, 1841, 203. Bairro: Petrópolis

90460-001. Porto Alegre - RS - Brasil

E-mail: dhpozza@yahoo.com.br

*medullary and soft tissues modifications with higher accuracy, without exposing the patient to ionizing radiations*⁹

*Diagnosis of active chronic osteomyelitis, or osteomyelitis overlapping other pathologies, is difficult, and the same applies to the concept of cure, since there may be prolonged asymptomatic intervals. Clinical-radiological criteria can be used, especially with patients who present low probability of infection, avoiding invasive procedures such as the scintigraphy, which is, in some cases, non-conclusive*¹⁰

In cases of chronic osteomyelitis, a radiolucent and circumscribed image can be seen, presenting central radiopaque sequestra and enlarged radiopacities of the surrounding bone due to a local osteogenic reaction.³

Patients who present active chronic osteomyelitis usually require long-term use of antibiotic therapy and, in some cases surgical intervention is indicated.¹¹

*Mader, Adams and Morrison*¹² administered clindamycin and cefazolin to rabbits, to treat induced osteomyelitis caused by *Staphylococcus aureus*. It was found that clindamycin was more effective, presenting higher concentrations in both infected and healthy tissues. Cancino et al¹³ in a retrospective study found that clindamycin was the most widely used antibiotic for closed mandibular fractures in a given oral and maxillofacial surgery service. The drug was administered to about 60% of the treated patients

This bone pathology presents various forms, depending on the virulence of the infecting microorganism, the host capacity of effective immune response and the kind of reaction of the periosteal and osseous tissues. Corticotomy can be used as treatment, and it is not effective, bone resection can be done as a more radical alternative. However, the most aggressive treatment mode might imply complications, such as loss of function, exposure of the inferior alveolar nerve and later problems regarding the reconstruction of the affected organ.¹⁴

*Cohen et al*¹⁵ successfully used the combination of antibiotic therapy and surgery when treating a patient with chronic jaw osteomyelitis. The authors administered vancomycin, and the surgical debridement was performed until the underlying bone started bleeding. Antibiotic therapy

was administered for one additional month, and the lesion was cured. Chronic osteomyelitis is usually treated by the combination of antibiotic therapy and surgical debridement of the lesion.¹⁶ These authors believe that removal of the diseased bone can be problematic because it is difficult to differentiate it from healthy bone, thus leading to insufficient or excessive corticotomy. The same authors treated a patient who had been suffering from osteomyelitis for 12 years, using intravenous clindamycin, combined with oral tetracycline. Tetracycline was used to mark the healthy bone which was preserved during surgery; the necrosed bone was completely removed.

*Bar et al*⁷ treated a case of mandibular osteomyelitis caused by *Mycobacterium abscessus* with amoxicillin and clavulanic acid and surgery. As the later treatment failed, the patient was reoperated on and the antibiotic was changed to ampicillin associated with clarithromycin and rifampicin and a successful result was achieved.

Antibiotic therapy alone is not enough for the treatment of osteomyelitis, since the devitalized osseous tissue in combination with the capsule of the surrounding fibrous connective tissue protects the microorganisms from the drug action. The surgical treatment must be aggressive and associated with high doses of antibiotics, some authors believe that penicillin G is the medication of choice, followed by clindamycin. The penicillin G treatment may have to be administered up to six months.^{3,4}

CASE REPORT

A 54-year-old white female patient reporting traumatic extraction of the lower anterior teeth around one year before, followed by construction of an inferior denture. Her main complaint was pain and foul-smelling oral discharge for eight months. A purulent discharge in the region anterior to the mandibular ridge was present. The gingival mucosa was reddened, with enlarged volume and pain at palpation. A radiolucent area in the dental region of the edentulous alveolar ridge, with radiopaque focal areas suggesting bone resorption and formation of bone sequestra could be seen in the panoramic radiography (Figure 1-A).

The patient denied any systemic disease or allergies. The patient's blood pressure was 130X80 mmHg

The preliminary clinical and radiographic diagnosis was chronic osteomyelitis. The initial treatment consisted in clindamycin 300mg every 6 hours for 7 days, and ordering culture and antibiogram of the purulent discharge. When the patient returned, she reported regression of pain and regression of the purulent discharge, confirmed by clinical examination (Figure 1-B). Then, the surgical procedure to remove the affected tissues was performed.

After the antiseptics with chlorhexidine gluconate at 2%, an anesthetic blockage of both

inferior alveolar nerves with mepivacaine at 2% associated with adrenaline (1:100.000) was performed. Then, a wide incision was performed on the inferior alveolar ridge, exposing the lesion, and the margins of the healthy bone, what was checked by the different colors of the tissues (Figure 1-C). The yellowish/brown necrosed osseous tissue was completely removed by forceps and curets, until the remaining tissue presented normal color and started to bleed (Figure 1-D). It was copiously washed with saline to remove all remaining fragments. After the gingival plasty, primary closure was obtained by nylon 4-0 sutures. The specimen was sent to histologic examination.

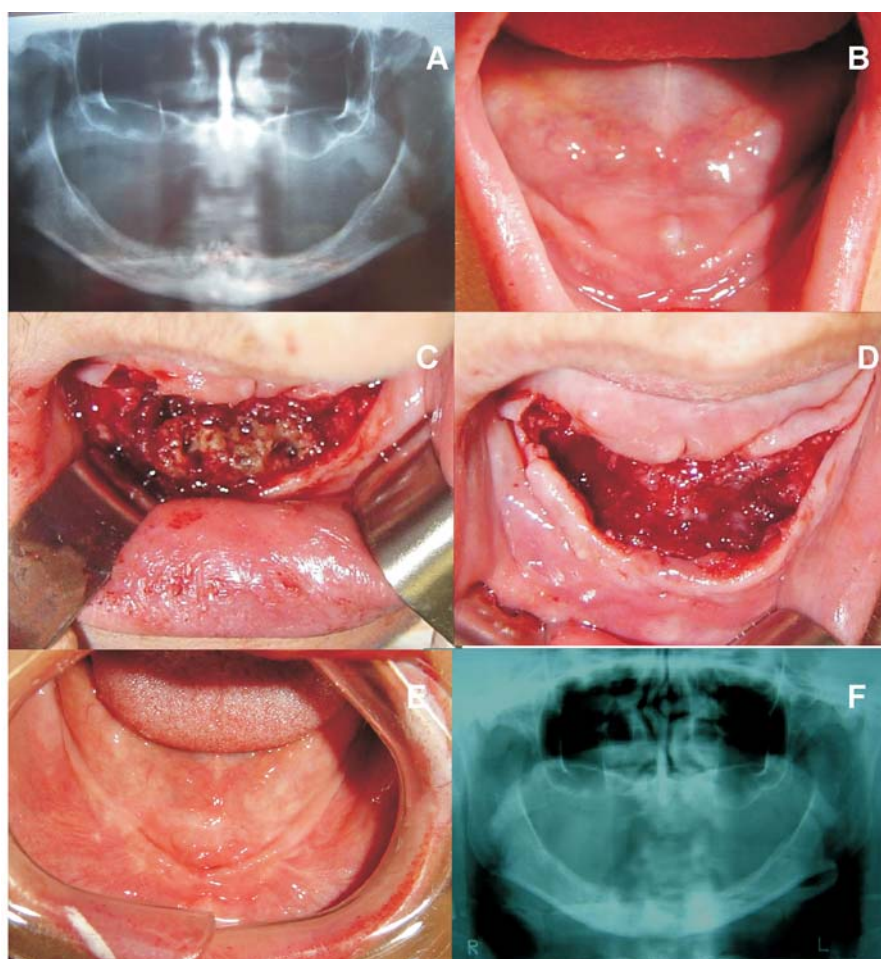


Figure 1: *A – Panoramic radiography in the preoperative; B – Intra-oral aspect after the administration of clindamycin for 7 days; C – Exposure of the necrosed osseous tissue; D – Underlying healthy osseous tissue; E – Three-month clinical follow-up; F – Three-month radiographic follow-up.*

During the postoperative period, treatment with clindamycin continued, with the same posology for 15 days, associated with a non-steroidal anti-inflammatory for 4 days (loxoprofen sodium 60 mg) and an analgesic (dipyrone 500 mg) for 2 days, both administered every 6 hours. On the fifteenth day, the patient was clinically well, without complaints or side effects, and the suture was removed. After three months, the patient was in good clinical condition and signs of the bone neoformation could be radiographically seen at the operated site (Figure 1-E; F).

DISCUSSION

This is a case of chronic osteomyelitis affecting the medullary spaces and the mandibular osseous corticals. Its origin was odontogenic and presented with purulent discharge.¹⁻⁵

According to Reinert, Widlitzek and Venderink,⁹ clinical examination alone can be enough to diagnose mandibular chronic osteomyelitis. On the other hand, Sapienza et al¹⁰ and Resnock and Niwayama¹¹ stated that the diagnosis of this pathology is difficult and radiological examinations have been used, particularly at the onset of the disease. In this case, because of the facts reported on the patient's clinical history

(traumatic teeth extractions, time of the disease) associated to clinical characteristics of pus presence and radiographic appearance, provided an easier and more accurate diagnosis

The radiographic characteristics of the osteomyelitis presented are in accordance with those reported by Neville et al⁹ i.e., a radiolucent circumscribed image presenting central bone sequestra and enlarged radiopacity in the surrounding bone. Due to the characteristics of the pathology and of the clinical history, there was no need for other exams, as suggested by some authors.^{9, 10}

The protocol used for treating this particular case was suggested in the literature,^{3, 4, 11, 15-17} (use of long-term antibiotic therapy associated with surgical intervention). Clindamycin was the antibiotic of choice because of its effective action on osseous tissues such as the mandible.^{4, 12, 13, 16}

A wide incision to remove all the diseased tissue, as well as an occlusive suture to assure a primary closure of the surgical wound,⁴ were performed to ensure a successful operation.

It was concluded that although mandibular chronic osteomyelitis is not a frequent pathology, mainly as a result of innovations in dental techniques and biosafety, it should be carefully treated so that a good prognosis associated with treatment success can be reached.

Intervenção cirúrgica combinada com a terapia antibiótica na osteomielite mandibular crônica: estudo de caso

Resumo

A osteomielite crônica da mandíbula geralmente apresenta-se como uma patologia de difícil tratamento, necessitando de terapia antibiótica de longa duração e intervenção cirúrgica, por vezes agressiva. No presente estudo, relata-se uma paciente do gênero feminino de 54 anos, acometida por osteomielite crônica da mandíbula há oito meses, que foi tratada com sucesso através da associação medicamentosa com o tratamento cirúrgico.

Palavras-chave: osteomielite; cirurgia bucal; clindamicina; mandíbula

REFERENCES

1. SPAGNOLO N, GRECO F, ROSSI A, CIOLLI L, TETI A, POSTERARO P. Chronic Staphylococcal Osteomyelitis: a New Experimental Rat Model. *Infect Immun.* p.5225-5230, 1993.
2. TOPAZIAN RG, GOLDBERG MH. *Infecções maxilofaciais e orais.* 3th ed. São Paulo: Santos; 1997.

3. NEVILLE BW, DAMM DD, ALLEN CM, BOUQUOT JE. Patologia oral e maxilofacial. Rio de Janeiro: Guanabara / Koogan; 1998.
4. PETERSON LJ, ELLIS III E, HUPP JR, TUCKER MR. Cirurgia oral e maxilofacial contemporânea. Rio de Janeiro: Guanabara / Koogan; 2000.
5. EYRICH GKH, BALTENSBERGER MM, BRUDER E, GRAETZ KW. Primary Chronic Osteomyelitis in Childhood and Adolescence: A Retrospective Analysis of 11 Cases and Review of the Literature. J Oral Maxillofac Surg. v.61, p.561-573, 2003.
6. SCHULTZ C, HOLTERHUS PM, SEIDEL A, JONAS S, BARTHEL M, KRUSE K. Chronic recurrent multifocal osteomyelitis in children. Pediatr Infect Dis J. v.18, p.1008-1013, 1999.
7. JOB-DESLANDRE C, KREBS S, KAHAN A. Chronic recurrent multifocal osteomyelitis: five-years outcomes in 14 patients cases. J Bone Spin. v.64, p.245-51, 2001.
8. LAVIS JF, GIGON S, GUEIT I, MICHOT C, TARDIF A, MALLET E. Chronic recurrent multifocal osteomyelitis of the mandible. A case report. Arch Pediatr. v.9, p.1252-1255, 2002.
9. REINERT S, WIDLITZEK H, VENDERINK DJ. The value of magnetic resonance imaging in the diagnosis of mandibular Osteomyelitis. Brit J Oral Maxillofac Surg. v.37, p.459-463, 1999.
10. SAPIENZA MT, HIRONAKA F, LIMA ALLM, YAMAGA LYI, HAMADA E, WATANABE T, COSTA PA, BUCHPIGUEL CA. Avaliação de atividade inflamatória na osteomielite crônica. Contribuição da cintilografia com anticorpos policlonais. Rev Assoc Med Bras. v.46, n.2, 2000.
11. RESNOCK D, NIWAYAMA G. Diagnosis of bone and joint disorders, 3th ed. Philadelphia, Saunders; 1995.
12. MADER JT, ADAMS K, MORRISON L. Comparative Evaluation of Cefazolin and Clindamycin in the Treatment of Experimental Staphylococcus aureus Osteomyelitis in Rabbits. Ant Agents Chemother. p.1760-1764, 1989.
13. CANCINO CMH, GAIÃO L, OLIVEIRA FAM, GERHARDT DE OLIVEIRA M. Profilaxia antibiótica em fraturas mandibulares: estudo descritivo retrospectivo. Pesq Bras Odontoped Clin Integr. v.5, n.1, p.35-59, 2005.
14. JONES J, AMESS TR, ROBINSON PD. Treatment of chronic sclerosing osteomyelitis of the mandible with calcitonin: a report of two cases. Brit J Oral Maxillofac Surg. v.43, p.173-176, 2005.
15. COHEN MA, EMBIL JM, CANOSA T. Osteomyelitis of the Maxilla Caused by Methicillin-Resistant *Staphylococcus aureus*. J Oral Maxillofac Surg. v.61, p.387-390, 2003.
16. HARVEY BR, EPHROS H, DEFALCO RJ. Tetracycline Bone Labeling in Surgical Management of Chronic Osteomyelitis: A Case Report. J Oral Maxillofac Surg. v.62, p.752-754, 2004.
17. BAR T, MISHAL J, LEWKOWICZ A, NAHLIELI O. Osteomyelitis of the Mandible Due to Mycobacterium abscessus: A Case Report. J Oral Maxillofac Surg. v.63, p.841-844, 2005.

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