

CASE REPORT

Actinomyces Associated with Radicular Cyst: Case Report

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ABSTRACT

Actinomycosis is an infectious disease that rarely settles in the jaw. It is most commonly located in the cervicofacial, thoracic, abdominopelvic, and cerebral regions. Actinomycosis is mainly caused by *Actinomyces israelii*, a gram-positive facultative anaerobic bacterium. Surgical excision and antibiotic therapy are also required in the treatment approach. We present a rare case of surgical and medical treatment of Actinomycosis, which is rarely seen in the maxillary intraoral region. Actinomyces may be associated with a radicular cyst. The intraoral lesion of a 70-year-old diabetic female patient who applied to our clinic with long-term bleeding in the maxillary anterior region was surgically removed. The excised tissue was evaluated microscopically. Actinomyces associated with radicular cysts were seen. Short-term antibiotic therapy was then administered. An uneventful recovery was observed in the controls. *J Microbiol Infect Dis* 2022; 12(3):127-129.

Keywords: Actinomycosis, Actinomyces, Radicular Cyst

INTRODUCTION

Actinomycosis is an infection caused by gram-positive facultative anaerobic bacteria with filamentous branching. Because of its nomenclature, it can be thought of as a fungal infection [1]. It can be seen in an acute or chronic form. *Actinomyces israelii* is the most common bacterial species in those infections. They are found in calculus, periodontal pockets, dental caries, and oral mucosal surfaces, as well as in the upper respiratory tract, gastrointestinal tract, and female genital mucosa [2]. The cervicofacial, thoracic, abdominopelvic, and cerebral regions are most commonly affected by Actinomycosis [3]. Actinomyces are most commonly encountered as cervicofacial Actinomycosis. It is rarely localized in the intraoral and periodontal areas. Lesions in the intraoral region usually appear on the mandible, tongue, lips, and oral mucosa [4]. Periapical actinomycosis symptoms are milder than extraoral lesions. Multiple skin fistulas in cervicofacial Actinomycosis are mostly seen intraorally in periapical lesions [5]. The presence of yellow sulfur granules in

areas where the infection is fistulized is characteristic of Actinomycosis [6]. Under ideal conditions, the diagnosis of Actinomycosis can be made by performing a microbiological culture. However, the number of microbial cultures with positive results is less than 50% of the cases due to reasons such as previous antibiotic therapy or inadequate anaerobic conditions [1]. Therefore, a definitive diagnosis is required to directly examine the exudate and microscopic evaluation of the surgically removed tissue [7].

The primary type of antibiotic for the treatment of Actinomycosis is penicillins [8]. In contrast to areas with frequent Actinomycosis, surgical treatment combined with short-term antibiotic therapy is usually sufficient in cases of Actinomycosis in the periapical region. We present a rare located Actinomycosis case here.

CASE

A 70-year-old female was admitted to the oral and maxillofacial surgery clinic with the complaint of bleeding in the maxilla anterior region for a long time. According to the

anamnesis, it was learned that the patient had uncontrolled diabetes. First of all, the patient was hospitalized, and her diabetes was taken under control. A panoramic X-Ray showed a radiolucent area with irregular borders in the left maxillary central tooth region. In the intraoral examination, a raised lesion from the mucosa was seen in the same location (Figure 1).



Figure 1. A view of the lesion from the mucosa in the intraoral cavity.

The periosteal flap was removed under local anesthesia. The raised lesion on the anterior crest of the maxilla was excised to contain 2 millimeters of intact tissue. The cystic lesion seen in the adjacent region was enucleated. The flap was closed primarily with 3-0 silk sutures. The biopsy materials were sent to the Faculty of Medicine, Department of Pathology.

The relationship between the cyst wall and the actinomyces colonies was seen in examining the biopsy materials (Figure 2).

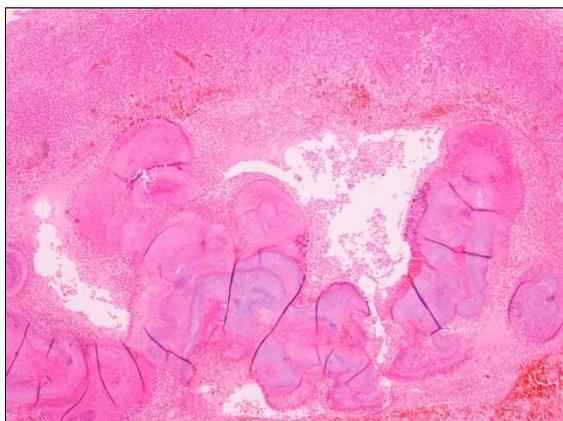


Figure 2: Actinomyces colonies within a radicular cyst. General view. HE; x 4).

The patient was treated with 875 mg Amoxicillin + 125 mg Clavulanic Acid (Augmentin; GlaxoSmithKline, Istanbul, Turkey) twice daily, Dexketoprofen (Arveles; Menarini International, Istanbul, Turkey) twice

daily, and 0.15% BenzylamineHCl + 0.12% at ChlorhexidineGluconate (Andorex; Pharmactiv A, Istanbul, Turkey), three times a day for a week. Additionally, she was advised not to use her prostheses for a week. Sutures were removed one week later. An uneventful improvement was observed in the radiographic and intraoral controls of the patient, who came to the control one and a half months later.

DISCUSSION

Actinomyces do not cause any infection or pathology as long as they remain on the mucosal surface. However, if the mucosal barrier is disrupted, microorganisms can become pathogenic by invading the jawbones or oral tissues. In addition, they can create a long-term chronic inflammatory process by tissue destruction and sinus tracts [2]. Disruption of the mucosal barrier is usually caused by trauma or dental treatments [5]. In this way, actinomyces invading the mucosa can cause infection in almost every anatomical region [3]. In this case, poor oral hygiene, the patient's diabetes, and root cyst damage in the region may have facilitated the invasion of microorganisms.

The incidence of Actinomycosis in periapical lesions was found to be 1.8%. Therefore, the incidence of Actinomycosis in odontogenic cysts is rare. Actinomyces lesions associated with radicular cysts found in the literature were usually surgically removed, and some were prescribed antibiotics [9]. Antibiotics, particularly penicillins, are the first-choice drugs to treat Actinomycosis [8]. The actinomycotic lesion in our case was also associated with a radicular cyst. We surgically removed both the cyst and the lesion. The lesion wholly healed with one week of penicillin treatment. One and a half months later observed an uneventful recovery in the follow-ups.

It should be differentiated from osteomyelitis caused by bacterial and fungal microorganisms [7]. In contrast to areas with frequent Actinomycosis, surgical treatment combined with short-term antibiotic therapy is usually sufficient in cases of Actinomycosis in the periapical region. However, it should be kept in mind that in some cases, microorganisms may spread to adjacent anatomical structures and cause cervicofacial Actinomycosis [5]. In addition, bone infections of actinomyces are severe. It should not be

forgotten that those seen in the maxilla may spread to the intracranial region [6]. In those cases, the therapeutic approach should be more assertive [5].

CONCLUSION

In addition to a clinical and radiological examination, a microscopic examination of the surgically removed tissue is essential for diagnosing Actinomyces. In periapical actinomyces cases, successful results are obtained in a short time with the use of appropriate antibiotics together with surgical treatment. The lesion and associated radicular cyst were surgically removed in this case report. Actinomyces were treated with penicillin derivative antibiotics. In the controls, it was observed that the recovery was uneventful.

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REFERENCES

1. Neville B, Damm DD, Allen C, Chi A. Oral and Maxillofacial Pathology, 3rd edn. St. Louis, Missouri: Saunders, 2009:203-205.
2. Kaplan I, Anavi K, Anavi Y, et al. The clinical spectrum of Actinomyces-associated lesions of the oral mucosa and jawbones: correlations with histomorphometric analysis. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2009; 108:738-746.
3. Gomes NR, Diniz MG, Pereira TD and et al. *Actinomyces israelii* in radicular cysts: a molecular study. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2017; 123:586-590.
4. Sakallioğlu U, Açıköz G, Kirtiloğlu T, Karagöz F. Rare lesions of the oral cavity: case report of an actinomycotic lesion limited to the gingiva. J Oral Scienc 2003; 45:39-42.
5. Hirshberg A, Tsesis I, Metzger Z, Kaplan I. Periapical actinomyces: a clinicopathologic study. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2003; 95:614-620.
6. Günhan Ö. Oral ve Maksillofasiyal Patoloji, 1st edn. Ankara: Atlas Kitapçılık Ltd Şti, 2001; p:185-186.
7. Regezi JA, Sciubba JJ, Jordan RC. Oral Pathology: Clinical Pathologic Correlations, 6th edn. St. Louis, Missouri: Elsevier Health Sciences, 2012:32-33.
8. Moturi K, Kaila V. Cervicofacial Actinomyces and its Management. Ann Maxillofac Surg 2018; 8:361-364.
9. Sun Y, Kuyama K, Fifita SF, et al. Actinomyces in radicular cyst: a case report and literature survey. Oral Med Pathol 2010; 14:113-116.