

# Rare Actinomycosis Limited to the Bone of the Mandible

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## ABSTRACT:

Actinomycosis is a rare soft tissue infection caused by a gram-positive, anaerobic bacteria. It is seen only approximately once a year in major medical centers, and is rarer still in the pediatric population. Actinomycotic lesions are usually described as single or multiple abscesses with hard fibrous walls and soft central loculations of white or yellow pus. Actinomycosis of bone is a rare disease. We report an unusual case of actinomycosis limited to the bone of the mandible in a child who was not immunocompromised and had no other known medical disease.

**Key words:** Actinomycosis, infection, mandible defect

## INTRODUCTION

Actinomycosis is an uncommon chronic infectious disease caused by *Bacterium Actinomyces Israelii*, which is an anaerobic gram positive oral flora that may become pathologic due to poor oral hygiene, dental/periodontal problems, trauma or following oral surgical procedures.<sup>1,2</sup> It is usually found in tonsillar crypts, gingival cervices, carious lesions, and non-vital dental root canals.<sup>2,3</sup> Because the oral mucosa is often portal of entry into deeper tissues, actinomycosis localized to the bone is extremely unusual.<sup>4</sup> Actinomycosis consists of three different forms: cervicofacial (the most common form), abdominal and pulmono- thoracic.<sup>1,2</sup> Actinomycosis is diagnosed with positive culture or detection of actinomyces colonies and sulphur granules in histopathological specimens.<sup>1</sup>

## Case report

A 13 years old girl was referred to Gazi University Faculty of Dentistry Department of Oral and Maxillofacial Surgery with a history of tenderness over the right mandibular premolar region. The tooth was vital with no past history of caries, fracture, or trauma. She had no cervical and submandibular lymphadenopathy. The

dental history of the patient documented scaling and root planing three weeks ago. Radiologic examination revealed a lytic lesion 1x1cm in diameter at the middle third of second mandibular premolar. Some lytic lesions (cryptic foci) were observed at the right and left mandibular canine without mucosal swelling (fig 1). In fine needle aspiration dense yellow to green aspirate was obtained. Under local anesthesia the lesions was completely excised and sent to oral pathology department for evaluation. Postoperatively, the patient was prescribed amoxicillin 500 mg orally three times a day for 1 week. The post-operative healing was uneventful.

The gross specimen was of homogeneous white appearance and rubbery consistency. The center of the specimen had purulent exudate. Microscopically granulomatous inflammation with a mixed type of inflammatory cell infiltration had been observed. In the center of this granulomatous structure, an actinomycotic colony (sulfur granules) with a radial pattern was noted (fig 2). The periphery of the lesion was intensely fibrotic and the colonies were gram positive (Brown Brenn stain) (fig 3). The final diagnosis was cervicofacial actinomycosis, the abdominal and thoracic types of disease were not detected. 1000 mg of the same antibiotic twice a day for 6 months was prescribed. Complete improvement of the lesions was observed after 5 weeks.

### Discussion

Actinomycosis is an indolent, slowly progressive infection which usually affects cervicofacial, thoracic and abdominal tissues.<sup>3</sup> Actinomycosis is especially seen in middle aged men and is rare in children. In the cervicofacial region, poor oral hygiene and odontogenic infections have been suggested as the main source of actinomycosis.<sup>6</sup>

Actinomycosis is an infectious disease that classically presents as an acute or chronic episode. Chronic actinomycosis is slowly progressive, painless, indurated, which can produce multiple abscesses and cutaneous fistulas. The acute and less frequent form is a rapidly progressive, tender and fluctuant mass, suggestive of an acute dental

infection. Actinomycosis should be suspected when sulfur-like granules are observed in pus drainage.<sup>2</sup> In the present case the absence of any draining sinus formation may be explained by the use of potent antibiotics at different time intervals.

Actinomycosis of bone is a rare disease that usually result from adjacent soft tissue infection, but may be also associated with trauma, infected osteoradionecrosis, bisphosphonate-associated osteonecrosis and invasion of microorganisms through out periodontal ligament.<sup>6</sup> In this patient non of the known reasons have been identified except our suspicious of unsteril scaling and root planing.

Sulfur granules are thought to be characteristic of actinomycotic infection but they reported only in 40% of the cases.<sup>8, 9</sup> These granules represent colonies of bacteria but they are not pathognomic of actinomycosis, because they are also produced by other groups of bacteria and fungi such as *Staphylococcus*, *Actinobacillus lignieresii*, *Sporotrichum* and *Phialophora*.<sup>8</sup>

It's pathogenesis is related to its ability to act as an intracellular parasite that resist phagocytosis. Lymph node involvement is not a feature, unless contiguous nodes are involved directly.<sup>5</sup> Oral infection may spread to the tongue, hypopharynx, larynx and paranasal sinuses.<sup>10</sup>

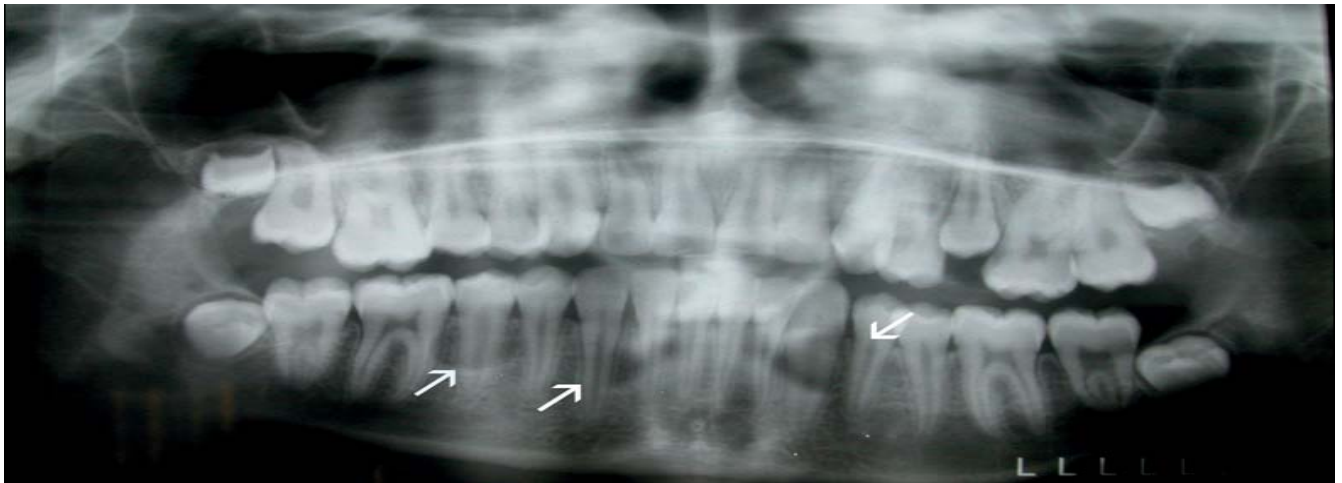
Because of the decrease in vascular supply, the penetration of antibiotics to the lesion is difficult. Therefore, the lesion should be removed surgically and the surrounding tissues should be intensely debrided<sup>11</sup>. Following surgery, long term antibiotic therapy should be prescribed. Hyperbaric oxygen usage as an adjunctive therapy have also been reported.<sup>8</sup>

### Conclusion:

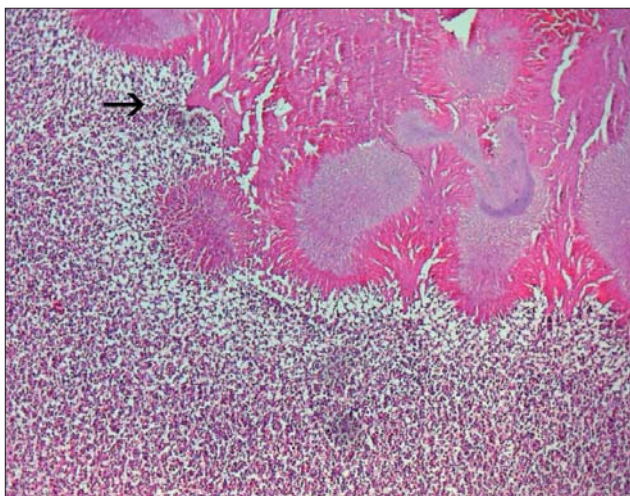
Actinomycosis is a very rare infectious disease in children. Due to the opportunistic characteristics of the actinomycotic infection, early and adequate differential diagnosis prior to therapeutic attempts, as well as management steps are of great importance in the oral cavity to prevent the spread of the disease.

## Reference:

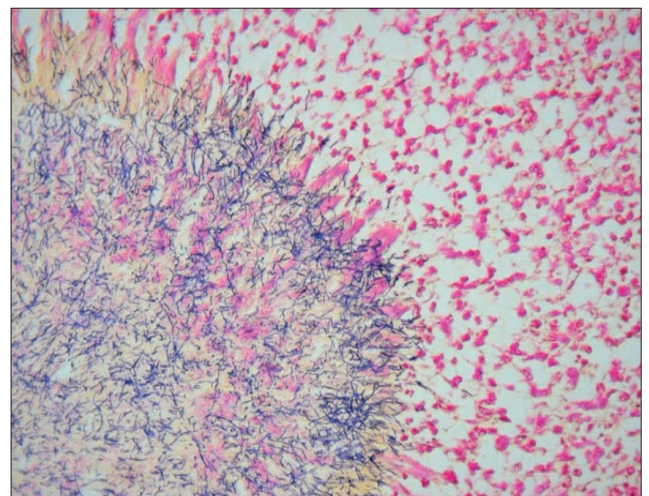
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**Fig 1:** Panoramic x-ray showed Radiolucent lesions (↙)



**Fig 2:** Colonies of actinomyces with their typical palisade organization and peripheral inflammatory reaction (H&E, X 100)



**Fig 3:** Blue stained Gram (+) actinomyces filaments (Brown Brenn, X.400.)