

Case Report

A CASE STUDY OF GINGIVAL ACTINOMYCOSIS REPORTED TO KCD PESHAWAR

Mussarat Hussain¹, Shameem Akhtar², Sabeen Riaz²

¹Department of Periodontology, Bacha Khan College of Dentistry Mardan, KP- Pakistan

²Department of Periodontology, Kyber College of Dentistry Peshawar, KP- Pakistan

ABSTRACT

Background: Actinomycosis caused by saprophytic Actinomyces species^{1,2,3} is an infectious disease that frequently causes chronic granulomatous and suppurative lesions. Although the most common type of Actinomycosis is cervical fascial, intraoral, and periodontal types rarely occur in a localized fashion⁴. Early and adequate differential diagnosis of Actinomycosis before therapeutic attempts and management steps are of great importance due to the opportunistic characteristic of actinomycotic infection.

The present case report is about a patient with chronic periodontitis and a diffuse and atypical actinomycotic lesion, which was limited to the gingival region. The diagnosis was based on histopathological examination, the case's history, and the lesion's clinical nature.

The patient responded to daily administration of Amoxicycillin 500mg TDS and Chlorhexidine mouthwash 0.2% rinse (following toothbrushing) performed with oral hygiene reinforcement and periodontal debridement monthly. Complete improvement of the lesion was observed after 5 months.

Study Design: A Case Report Study

Duration And Place Of Study: department at Khyber College of Dentistry Peshawar in March 2014 with a chief complaint of burning mouth, pain in eating, ulceration, and bleeding.

Keywords: Gingival actinomycosis, Actinomyces species, sulfur granules, antibiotic therapy, oral hygiene, periodontitis, KCD Peshawar.

INTRODUCTION

Actinomycetes that are part of oral flora¹⁻³ cause granulomatous and suppurative saprophytic lesions, known as Actinomycosis. Cervicofacial comprise approximately 60% of total Actinomycosis lesions in humans. Intraoral infections are relatively rare. Cervicofacial type accompanies the intra-oral lesions most of the time⁵. Oral mucosa, lips, mandible, and tongue are frequently the most affected areas in the oral cavity^{5,6}. Despite their fungal and bacterial

characteristics^{7,8}, Actinomyces species are classified as gram(+) anaerobic filamentous bacteria. Having a low-grade virulence, this microorganism develops a saprophytic infection in susceptible hosts, progressing into the tissues^{9,10}. *A. israelii*, *A. viscosus*, *A. odontolyticus*, *A. naeslundii*, and *A. meyeri*⁴ are identified as the most commonly found species in Actinomycotic lesions. These microorganisms have also been found in dental plaque, calculus, necrotic pulp, and infectious oral tissues such as tonsils. Actinomycetes may convert their nature from naturally residing microorganisms to pathologic under favorable circumstances such as poor oral hygiene, periodontal problems, trauma, infections, and oral surgical procedures in certain susceptible or immune-compromised patients^{2, 9, 11}.

Actinomycosis usually affects the tongue and the oro-alveolar mucosa among intra-oral and oral mucosal membranes. Being relatively rare in the gingiva, the characteristics of its lesions are typically similar to the

Correspondence:

Dr. Mussarat Hussain

Assistant Professor

Department of Periodontology, Bacha Khan Dental Section, Mardan - Pakistan

Email: shania1234543@gmail.com

Cell: +92-336-9247214

Date Received: Oct-07-2022

Date Accepted: Nov-20-2022

Date Revised: Dec-26-2022

Available Online: Jan-04-2023

lesions of the tongue and oral mucosa⁵. Lesion occasionally marks the disease's initial stage, progressively developing granulomatous and suppurative lesions and disrupts the mucosa, progressing further into the deeper tissues, producing a permanent discharge of purulent exudates^{6,11,12}. This report describes a patient with an unusual actinomycotic lesion limited to the gingiva.

CASE REPORT

A young female patient, aged 16 years, presented to the periodontology department at Khyber College of Dentistry Peshawar in March 2014 with a chief complaint of burning mouth, pain in eating, ulceration, and bleeding.

According to the patient, she had severe pain while brushing her teeth, and ulceration would occur afterward. Severe bleeding occurred while brushing. Also, she could not eat properly due to pain, and she had a burning mouth during periods between eating. She has had this problem for one and a half years.

She had taken treatment for this problem episodically during her stay in Saudi Arabia. She was advised to take Amoxicillin for about a month. She took it for one month and, after a while, for two months. According to the patient, little improvement would occur, but with the stoppage of medication, problems would reoccur.

Upon clinical examination, the patient had red-colored, edematous, fragile, and inflamed gums with ulceration on the palatal molar region and buccal premolar region. The lesion on the left molar appeared to be granulomatous with ulceration—lesions on marginal and interdental papilla with peeling of epithelium. The lesion appears to be white, with peeling of epithelium in the ulcerated region with a cotton swab giving the impression of the pseudomembrane.

Incisional biopsy was taken from the palatal molar region involving ulcerated granulomatous and normal tissue and sent to a laboratory for histopathological examination.

According to the biopsy report, multiple fragments of oral mucosa lined by benign squamous epithelium with some ulceration, granulation tissue formation, and many bacterial colonies resembling Actinomycosis (Actinomycosis Israeli) were seen. Infiltration of fibrous stroma (or) granulation tissue by many partially degenerated lymphocytes, neutrophils,

and macrophages was also seen.

No evidence of malignancy was seen in the sections examined. Intraoral Actinomycosis with ulceration granulation tissue formation and mixed nonspecific inflammation was seen.

Tissue scraps were sent to a laboratory to rule out Candidiasis. The report confirmed it to be negative and stated, "No spore or hyphae was seen in examined tissue; however, numerous pus cells and RBC cells were seen."

The Cultural Sensitivity Report stated no growth was yielded after 24 hours of 37 Celsius aerobic incubation. A full Blood Count (FBC) was performed, and all values were found to be in normal ranges. On radiographic examination (OPG), the patient was seen to be having mild generalized chronic periodontitis. The patient was diagnosed with Actinomycosis Israeli after histopathological confirmation.

Patient treatment was started; scaling and debridement were done, and oral hygiene instructions were given. Amoxicillin 500mg was prescribed TDS along with metronidazole 400mg BD for one week and was recalled after a month.

The patient was re-examined on follow, but no satisfactory results were observed. According to the patient, bleeding was reduced, but pain and burning sensation were still present. On clinical examination, gums were still red, ulcerated in some areas, and epithelium would peel off easily.

Medication was switched to Doxycycline 1g daily (500mg BD) for one month. Oral hygiene instructions were reinforced, and the patient was recalled after a month. The condition was still the same, and no improvement was seen. Rather, a burning sensation was increased.

Medication was once again switched back to Amoxicillin 500mg TDS (for one month). Scaling and debridement were performed, and oral hygiene instructions were reinforced. In addition, multivitamins (Surbex-Z) and iron tablets (Iberet) were prescribed, and the patient was advised to use chlorhexidine and benzydamine (Enziclor mouthwash). Metronidazole 400mg twice daily was also named for a week, and the patient was recalled after a month.

On follow-up, many satisfactory results were observed. Bleeding, burning sensations, and pain when

eating were diminished. Gums were less inflamed, and the color of the gingiva reversed back to its original color. Ulceration was confined to the premolar region, while ulcerations in molar and palatal sites were healed.

The patient was advised to continue the same med-

ication and was recalled every month to assess any improvement in the tissue response and to assess oral hygiene status.

Much improvement was observed with time, and gums reversed to their original color. Bleeding, pain, and





burning sensation were gone. Ulcerations were reduced to only one spot (44-45 region). A slight pseudomembranous slough was observed.

The patient was advised to continue the same medication, maintain oral hygiene, and have follow-up visits after every month. On every visit, her debridement was done to aid quick healing. Her carious teeth were also restored to prevent further carious lesion progression, food stagnation, and plaque accumulation.

After achieving satisfactory results in 6 months with no remission, the patient was told to maintain her oral hygiene and pay monthly visits for checkups. In addition, she was instructed to continue her medication for up to nine months, as is the treatment of Actinomycosis.

DISCUSSION

Actinomycosis, caused by a bacterium called *Actinomyces israelii*, which resides naturally in the nose and throat, does not cause the infection on its own and has to join with another bacterium (that enters the

body through a break in the skin or mucosa to acquire pathologic behavior) or has to enter through a breach in the mucosa in immunocompromised patients.

Actinomyces viscosus, *Actinomyces odontolyticus*, and *Actinomyces naeslundii* are the other three bacteria necessary for Actinomycosis to develop¹³. Actinomycosis was initially mistaken for a fungal infection due to its slowly spreading nature.

Although the oral mucosa is often the penetration site of the *Actinomyces* species into the deeper tissues, Actinomycosis is still extremely rare in oral mucosal membranes. As it lacks distinctive clinical features, it may mimic other lesions. Gingiva is considered an entrance site for this microorganism as a part of the oral mucosa membranes. Further, actinomycetes may also become pathologic due to periodontal disease. In their report, Suzuki and Delisle stated that one of the leading causes of pulmonary Actinomycosis may be aspiration of actinomycetes, originating from dental plaque and calculus and diseased inflamed periodon-

tium.

In this case, it is most probable that the actinomycotic lesion was due to penetration of causative bacteria from plaque accumulation. Poor oral hygiene and periodontitis provided a favorable environment for microorganisms to achieve their pathogenicity. The primary line of treatment for Actinomycosis is antibiotics. High doses of penicillin are usually necessary to cure the infection. In case of allergy to penicillin, other antibiotics can be used. Tetracyclines, clindamycin, or erythromycin are the most common examples of antibiotics used as an alternative to penicillin. The antibiotics can take a long time to cure the infection completely, a few months, or even up to a year.

Desquamative gingivitis is observed as a clinical feature in many diseases like necrotizing, a periodontal manifestation of dermatological conditions, tuberculosis and syphilis, and chronic candidiasis comprising chronic and severe infections. However, the desquamation of gingiva in Actinomycosis is uncommonly encountered in dental practice.

However, the region's initial history and diseased nature suggest that periodontitis may have promoted its clinical appearance.

It is rare in the dental literature that Actinomycosis lesions are limited to periodontal tissues. Nagler et al., in one of their reports, presented a case limited to the left mandibular molar region representing a juvenile periodontitis-like lesion and emphasized the importance of early and differential diagnosis of Actinomycosis by dental professionals.

Our patient's history and clinical characteristics did not allow us to perform laboratory culturing. However, the strict anaerobic qualities of Actinomyces species may inhibit the growth of this microorganism and may prevent clinicians from obtaining positive laboratory cultures. Due to these factors, differential diagnosis through histopathology is still one of the most reliable diagnostic techniques.

This patient was treated with amoxicillin 500mg thrice daily for one month with no betterment. Doxycycline, which is rarely advised in treating Actinomycosis, was also not effective in this case study. Likewise, Chlorhexidine rinses, with their antiplaque effects, further helped treat lesions. However, oral hygiene reinforcement and periodontal therapy should be essential in treating such lesions and antibiotics.

CONCLUSION

Actinomycetes are opportunistic bacteria in oral flora with low-grade virulence factor, which develops saprophytic infection into deep tissues in susceptible immunocompromised patients.

One of the best ways to prevent actinomycosis infections is to practice good oral hygiene. Scheduled regular visits to the dentist can help in the timely diagnosis of potential problems, preventing it from becoming a serious condition. Actinomycosis is highly curable, and usually, a full recovery is made by patients with proper treatment and care.

REFERENCES

1. Carmella Wint and Mathew Solan 25 July 2012.
2. Schaal KP, Schofield GM, Pulverer G (1980) Taxonomy and clinical significance of Actinomycetaceae and Propionibacteriaceae. *Infection* 8, 122-130.
3. Bennhoff DF (1984) Actinomycosis: diagnostic and therapeutic considerations and a review of 32 cases. *Laryngoscope* 94,1198-1217 3. Lerner PI (1988) The lumpy jaw. Cervicofacial Actinomycosis. *Infect Dis Clin North Am* 2, 203-220.
4. Laskaris G (1996) Oral manifestations of infectious diseases. *Dent Clin North Am* 40, 395-4236.
5. Alamillos-Granados FJ, Dean-Ferrer A, Garcia-Lopez A, Lopez-Rubio F (2000) Actinomycotic ulcer of the oral mucosa: an unusual presentation of oral Actinomycosis. *Br J Oral MaxillofacSurg* 38,121-123.
6. Collee JG (1982) The role of anaerobes and possible indications for anti-anaerobe chemotherapy in head, neck and thorax infections. *J Antimicrob Chemother* 10, 145-151.
7. Samuels RH, Martin MV(1988) A clinical and microbiological study of Actinomycetes in oral and cervicofacial lesions. *Br J Oral MaxillofacSurg* 26, 458-463.
8. Herman WW, Whitaker SB, Williams MF, Sanguenza OP (1998) Acuteactinomycosis presenting as an ulcerated palatal mass. *J Oral MaxillofacSurg* 56, 1098-1101.
9. Zitsch 3rd RP, Bothwell M (1999) Actinomycosis: a potential head and neck surgery complication. *Am J Otolaryngol* 20, 260-262.
10. Shaheen SO, Ellis FG (1983) Actinomycosis of the larynx. *J R Soc Med* 76, 226-228.
11. Rose LF (1990) Infective forms of gingivostomatitis. In *Contemporary Periodontics 1990*, Genco, RJ, Goldman HM, Cohen DW eds, The CV Mosby, Philadelphia, 248-249.

12. Ficarra G, Di Lollo S, Pierleoni F, Panzoni E (1993) Actinomycosis of the tongue: a diagnostic challenge. *Head Neck* 15, 53-55
13. Suzuki JB, Delisle AL (1984) Pulmonary actinomycosis of periodontal origin. *J Periodontol* 55, 581-584.
13. Nagler RM, Ben-Arieh Y, Laufer D (2000) Case report of regional alveolar bone actinomycosis: a juvenile periodontitis-like lesion. *J Periodontol* 71, 825-829.
14. Samanta A, Malik CP, Aikat BK (1975) Periapical Actinomycosis. *Oral Surg Oral Med Oral Pathol* 39, 458-462.
15. Oppenheimer S, Miller GS, Knopf K, Blechman H (1978) Periapical Actinomycosis. An unusual case report. *Oral Surg Oral Med Oral Pathol* 46, 101-106
16. Dr.Mussarat Hussain, Department of Periodontology, bkmc Mardan(Demonstrator)
17. Dr.Shameem Akhtar, department of periodontology, KCD Peshawar (Professor)
18. Dr. Sabeen Riaz, department of periodontology, KCD Peshawar m(TMO)

CONFLICT OF INTEREST: Authors declare no conflict of interest

GRANT SUPPORT AND FINANCIAL DISCLOSURE NIL