International Journal of Otorhinolaryngology and Head and Neck Surgery
Thangavel S et al. Int J Otorhinolaryngol Head Neck Surg. 2023 Oct;9(10):838-841
http://www.ijorl.com
pISSN 2454-5929 | eISSN 2454-5937

DOI: https://dx.doi.org/10.18203/issn.2454-5929.ijohns20232905

Case Report

Eclipsed sunray in the tonsil: mystery unfolded

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Received: 30 June 2023
Revised: 16 September 2023
Accepted: 20 September 2023

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ABSTRACT

Background: Actinomyces are saprophytic, filamentous branched bacteria, living as commensal organisms in the oral cavity. They become invasive when they gain access to the subcutaneous tissue, through a mucosal lesion. The common predisposing conditions are having dental caries, dental manipulations and maxillo facial trauma. Actinomycosis of the tonsil is usually related to obstructive tonsillar hypertrophy rather than recurrent tonsillitis. Since actinomyces is a normal inhabitant of the human body, it will be found in every anatomical site of the body. But tonsillar actinomycosis results from reduction of oxidation- reduction potential caused by pyogenic and anaerobic infections. Mucosal trauma plays a major role in the entry of the organisms. These organisms produce toxins and proteolytic enzymes to cause pathology within the tonsil. Dilated cystic spaces and neutrophilic infiltration are the unusual features highlighted in this report. Antibiotic therapy along with tonsillectomy is suggested as the preventive and curative treatment for tonsillar actinomycosis.

Keywords: Actinomycosis, Tonsillectomy, Tonsillitis, Tonsillar hypertrophy

INTRODUCTION

In 1896, Actinomyces was first isolated in the tonsillar tissue.[1] Actinomyces are saprophytic, gram-positive, non-acid fast bacilli with branching filaments.[2] They are the normal inhabitant of the human body and are found in tonsillar tissues with an occurrence rate of 1.3% to 48%.[3,4] Children are more susceptible to tonsillar infections than adults. Actinomycosis of the tonsils however, is more common in adults because of the inhabitant nature of the organism in the oral cavity. This infection present primarily as obstructive tonsillar hypertrophy or foul smelling tonsillar concretions rather than a discharging sinus causing recurrent tonsillitis. Hereby presenting a case of Actinomycosis tonsil with multiple epidermoid cysts treated with tonsillectomy and post-op antibiotics.

CASE REPORT

A middle-aged male with no comorbidities presented to our Outpatient department with the chief complaints of recurrent episodes of acute on chronic tonsillitis, mainly on the right side, for the past two years. Each episode was preceded by yellowish discharge from the right tonsil and associated with sore throat, dysphagia and odynophagia for three days which subsided by symptomatic management without antibiotic therapy. He developed nearly 40 episodes in the previous two years. It was not associated with fever, halitosis, trauma, ear pain or mouth breathing. There was no history of loss of weight or appetite. Informed consent was obtained from the patient.

On examination, the patient was thin-built and well-nourished. There were no dental caries on oral cavity

examination. Oropharynx showed bilateral grade 1 tonsillar enlargement withcrescentic congestion of bilateral anterior pillars suggestive of chronic fibrotic tonsillitis (Figure 1A). No follicles or membranes were noted over the tonsils. The posterior pharyngeal wall was normal. Neck examination showed right subcentimetric Jugulo- digastric lymph nodes.

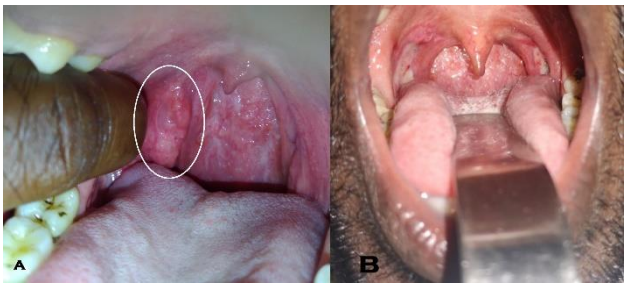

Figure 1: (A) Pre-operative Right tonsillar hypertrophy (Grade 1) (white marking) and (B) post-op tonsillectomy after 2 weeks.

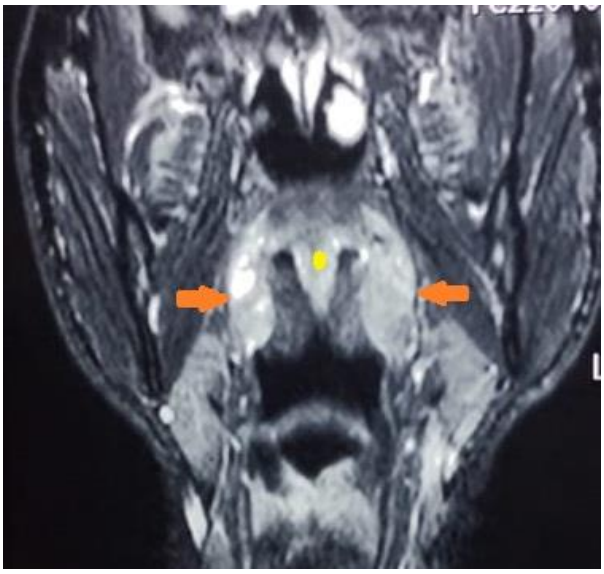

Figure 2: T2/STIR MRI showing hyper-intense cyst in the right tonsillar fossa (orange arrow) and uvula (yellow dot).

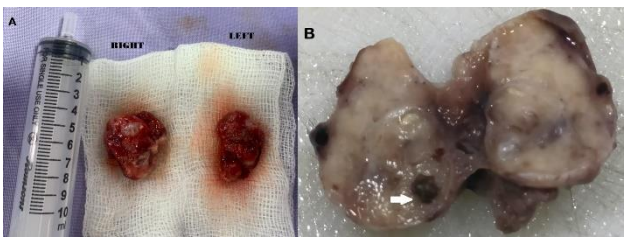

Figure 3: (A) Excised tonsillar specimen and (B) cut surface of the right tonsil showing cystic spaces (white arrow).

Magnetic resonance imaging was planned to rule out branchial sinus anomaly. It showed a cyst of size 5.9*3 mm T2/STIR hyperintense and T1 hypo intense in the right tonsillar region with no apparent tracts or surrounding inflammatory changes (Figure 2).

Bilateral tonsillectomy was done using dissection and Snare method under general anaesthesia (Figure 3 A and B). Both tonsillar tissues and concretions that were removed from the left tonsil were sent for histopathological examination.

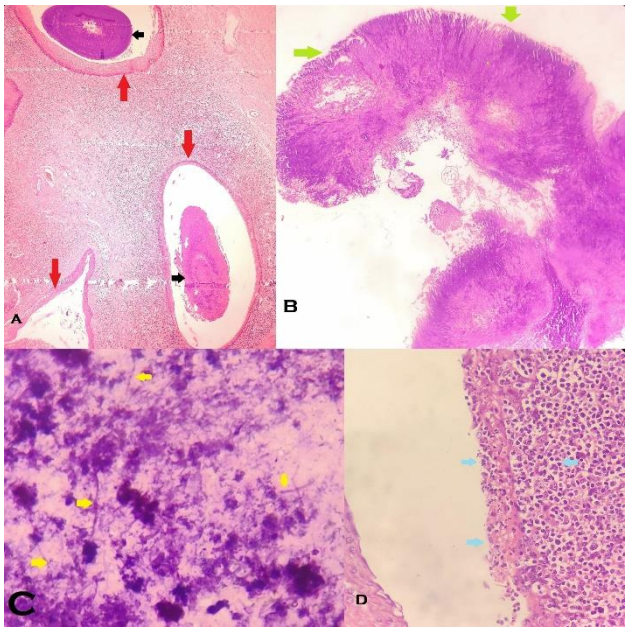

Figure 4: Haematoxylin & Eosin (H&E) showing (A) actinomycotic colonies (black arrow) in dilated cystic spaces (red arrow) (40X); (B) colony with features of sunray appearance (green arrow) (400X); (C) actinomyces filamentous bacilli (yellow arrow) (1000X); (D) neutrophilic infiltration around cyst lining (blue arrow) (400X).

The biopsy was reported as bilateral tonsillar Actinomycosis with multiple epidermoid cysts (Figure 4A). It showed ovoid purple colonies of basophilic filamentous and granular organisms having a focal sun-ray appearance (Figure 4B). Gram stain revealed Gram-positive delicate thready branching filaments and dusty colonies and negative for AFB stain suggestive of Actinomycosis (Figure 4C). These colonies were surrounded by abundance of neutrophils suggesting of localised infection and inflammation (Figure 4D).

Both tonsils also showed dilated cystic spaces lined by stratified squamous epithelium indicative of retention epidermoid cyst. Then the patient was advised to take oral Amoxicillin+ Clavulanic acid 625 mg twice daily for three weeks. On follow-up after a week and then two weeks, the bilateral tonsillar fossa healed well and there were no new complaints (Figure 1B). He was followed up for a month and was noted to be doing well without any symptoms.

DISCUSSION

The most common Actinomyces species are Actinomyces israeli and actinomyces naeslundi.[5,6] The characteristic feature of actinomycosis is the formation of painful abscesses that eventually breaks down and releases pus forming a sinus tract. The released pus contains sulfur granules with bacteria. Our patient also could have had a sinus tract that was the source of recurrent tonsillitis infection. The incidence of actinomyces in the tonsillar tissue is more in adults than in children.

Trauma appears to be the foremost cause of actinomyces infection.[1,5] The mucosal toughness and integrity provide a mechanical barrier for the entry of pathogens. But this is weakest in two areas: tonsillar crypts and gingival margins. The pathogens reside in those areas and proliferate when an optimal environment results in tonsillar hypertrophy. But studies by Toh et al and Lierop et al showed no histopathological evidence of Actinomyces infection and tissue reaction.[4,7] But our biopsy report did not support the same and it was showing surrounding inflammatory response with neutrophilic infiltration. This infiltration was suggesting the acute inflammation around the colonies and also the ability of immune system to keep the infection localised. This was correlating with the patient's history of recurrent episodes of tonsillitis during yellowish discharge from the tonsils. Aydin et al. noted crypititis could be the cause of tissue hypertrophy.[8] And also, the release of toxins and pro-inflammatory cytokines could cause epithelial cell reaction and hypertrophy. The colonisation of the pathogen is more commonly found in systemic diseases like sickle cell anaemia, thalassemia and bronchial asthma.[1] This has been explained by reduction of oxidation- reduction potential in these conditions and thereby proliferation of the organisms in the tonsillar tissue. Poor dental hygiene also predisposes to this condition. Haematogenous spread is rare, while lymphatic spread does not occur because of the large size of the organism.[1,9] Our patient also had removable concretions from the tonsils suggesting of Actinomycosis.

Oral antibiotics like the penicillin group of drugs reduce tonsillar hypertrophy and its obstructive symptoms symptomatically.[9] Bhargava et al. explained the low prevalence of actinomyces in prolonged antibiotic therapy in recurrent tonsillitis.[1] Since our patient did not take antibiotic therapy during each episode, he developed recurrent tonsillitis. But postoperatively, he was given antibiotics for three weeks.

The only treatment for tonsillar actinomycosis is tonsillectomy.[1] Complete removal of both the tonsillar tissue helps in the prevention of recurrence. But bleeding in the late postoperative period is the most critical complication. Our patient was followed up for a month and was doing well without any symptoms. Epidermoid cysts in the mouth are an infrequent occurrence. The presence of epidermoid cysts in our case showed a chronic infection in the tonsils. Malignant transformations have been noted in the cyst wall. However, no conversion was noted in our patient. Histopathological examination of the tonsillar tissue plays a significant role in diagnosis.

CONCLUSION

Actinomyces are spore-free and non-communicable organism that resides in the tonsillar crypts opportunistically. The mere presence of the organism doesn't indicate an active infection. Mucosal trauma plays a significant role in the active disease and spreading to the neighbouring structures by producing toxins. Histopathological examination confirms the diagnosis. Antibiotics reduce the frequency of actinomycosis infection.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Bhargava D, Bhusnurmath B, Sundaram KR, Raman R, Al Okbi HM, Al Abri R, et al. Tonsillar actinomycosis: a clinicopathological study. Acta Trop. 2001;80(2):163-8.
2. Kansu L. Relation of Actinomyces with Tonsillar Hypertrophy and Antibiotic Use. Turk Arch Otorhinolaryngol. 2017;55(1):17-21.
3. Can Ş, Bayindir T, Kuzucu Ç, Bayindir Y, Kizilay A. Serviko-fasiyal aktinomikoz: akut süpüratif seyir gösteren bir olgu sunumu. Bozok Tıp Derg. 2014.
4. Toh ST, Yuen HW, Goh YH. Actinomycetes colonization of tonsils: a comparative study between patients with and without recurrent tonsillitis. J Laryngol Otol. 2007;121(8):775-8.
5. Kutluhan A, Salvız M, Yalçıner G, Kandemir O, Yeşil C. The role of the actinomyces in obstructive tonsillar hypertrophy and recurrent tonsillitis in pediatric population. Int J Pediatr Otorhinolaryngol. 2011 ;75(3):391-4.
6. Ozgursoy OB, Kemal O, Saatci MR, Tulunay O. Actinomycosis in the etiology of recurrent tonsillitis and obstructive tonsillar hypertrophy: answer from a histopathologic point of view. J Otolaryngol - Head Neck Surg J Oto-Rhino-Laryngol Chir Cervico-Faciale. 2008;37(6):865-9.
7. van Lierop AC, Prescott C a. J, Sinclair-Smith CC. An investigation of the significance of Actinomycosis in tonsil disease. Int J Pediatr Otorhinolaryngol. 2007;71(12):1883-8.
8. Aydin A, Erkiliç S, Bayazit YA, Koçer NE, Ozer E, Kanlikama M. Relation between actinomycosis and histopathological and clinical features of the palatine tonsils: a comparative study between adult and pediatric patients. Rev Laryngol - Otol - Rhinol. 2005;126(2):95-8.

9. Maiwand O, Makey AR, Khagani A. Actinomycosis of the trachea affecting the right supraclavicular region. Thorax. 1982;37(11):861-2.

Cite this article as: Thangavel S, David C, Kuppusami M, Nalamate R, Phansalkar M, Kurien M. Eclipsed sunray in the tonsil: mystery unfolded. Int J Otorhinolaryngol Head Neck Surg 2023;9:838-41.