



TONSILLAR ACTINOMYCOSIS – INCIDENTAL OR PATHOGENIC ? A TERTIARY CARE HOSPITAL EXPERIENCE

*Dr. Ponnusamy Karkuzhali M.D.

Former Professor and HOD, Department of Pathology, Melmaruvathur Adhiparasakthi Institute of Medical Sciences and Research, Melmaruvathur, Tamil Nadu.

*Corresponding Author: Dr. Ponnusamy Karkuzhali

Former Professor and HOD, Department of Pathology, Melmaruvathur Adhiparasakthi Institute of Medical Sciences and Research, Melmaruvathur, Tamil Nadu.

Article Received on 22/03/2018

Article Revised on 11/04/2018

Article Accepted on 01/05/2018

ABSTRACT

Introduction: The procedure of tonsillectomy is performed for several indications. Sometimes, the specimen sent for histopathological examination reveals an unexpected result. Colonisation of actinomycosis is one such finding and it is debatable whether it is incidental or pathogenic. **Objective:** This study was conducted to establish the incidence of Actinomyces in the tonsillectomy or adenotonsillectomy specimens received in the laboratory of a tertiary care hospital. **Results:** 266 patients who underwent bilateral tonsillectomy extending over a period of two years were included in the study. Incidence of tonsillar actinomycosis was 12% (33 out of 266 cases). It was found to be common in the age group of 11-30 years. The M:F ratio was 3:5. It was observed more often in unilateral tonsil. **Conclusion:** In my study, presence of actinomyces colonies in tonsillar specimens is more of an incidental finding and did not require management of the patients for that post operatively. However the importance of oral hygiene is to be stressed upon on the patients, as tonsillar actinomycosis was documented more in cases with bad oral hygiene, including dental caries.

KEYWORDS: Tonsillar actinomycosis – Incidental finding – Tonsillar cryptitis.

INTRODUCTION

Actinomyces are anaerobic, gram positive, non-acid fast, branched, filamentous bacteria. They colonize in gingival crypts, dental calculi and tonsillar crypts.^[1,2] Most human cases of actinomycosis are caused by *Actinomyces israelii*. Cervicofacial infection involving the jaw is the most common manifestation. The organisms are saprophytic commensals and gain access to the tonsillar tissue as a result of a breach in the epithelium due to dental procedures, dental caries or trauma. The presence of *Actinomyces* in tonsils is not synonymous with clinical fulminant disease, although it is mostly referred as tonsillar actinomycosis.

Objective

The aim of this study was to investigate the prevalence of *Actinomyces* in histopathologic section of tonsillar tissue of patients with the diagnosis of Chronic Tonsillitis or Adenotonsillitis.

MATERIALS AND METHODOLOGY

This is an observational study conducted at Melmaruvathur Adhi Parasakthi Institute of Medical Sciences, Melmaruvathur, Tamilnadu, India. 266 cases were included in this study, including the cases in the years 2014 to 2015. The age of the patients in this study population ranged from 4 to 40 years. All of them

underwent tonsillectomy indicated by recurrent or chronic tonsillitis.

532 palatine tonsillar specimens were surgically removed from a total of 266 cases. Surgically removed bilateral tonsillar tissues were fixed in formalin, embedded in paraffin and the prepared slides, stained with H&E were studied and reported mostly as chronic tonsillitis. Serial sections were taken, for those specimens showing *Actinomyces* bacteria and the slides were stained with Gram Stain and PAS stain.

The changes in the overlying squamous epithelium, presence of cryptitis, reactive lymphoid follicular hyperplasia, and tonsillar fibrosis were noted. The data was further analysed to determine the statistical significance of Actinomycosis in association with chronic tonsillitis.

RESULTS

532 tonsillar specimens from 266 cases, which were studied in detail showed presence of *Actinomyces* in 36 tonsillar specimens (33 cases). Hence the incidence is 12%. The age of these patients ranged from 4 to 40 years. Peak incidence was found to be in the age group of 11 – 30 years. A female preponderance was noticed.

Out of 33 cases, 13 were males and 20 were females. (Fig.1).

Unilateral involvement of tonsillar Actinomycosis were a majority (30 out of 33 cases). The actinomycotic colonies were found in right sided tonsil in 49% (16 out of 33 cases), left sided tonsil in 42% (14 out of 33 cases) and in the remaining three cases, both tonsils were seen involved. The actinomycotic colonies were seen in the

crypts and were surrounded by necrotic material and cellular debris and/or inflammatory cells (Predominantly lymphocytes or neutrophils or both) (Fig.2.) The colonies were positive for Gram stain & PAS stain (Fig.3.). Additional histological features noticed include, irregular hyperplasia of squamous epithelium with reactive atypia, focal ulcerations, cryptitis, subepithelial or intratonsillar fibrosis, congestion and inflammation and reactive lymphoid hyperplasia with follicle formations.

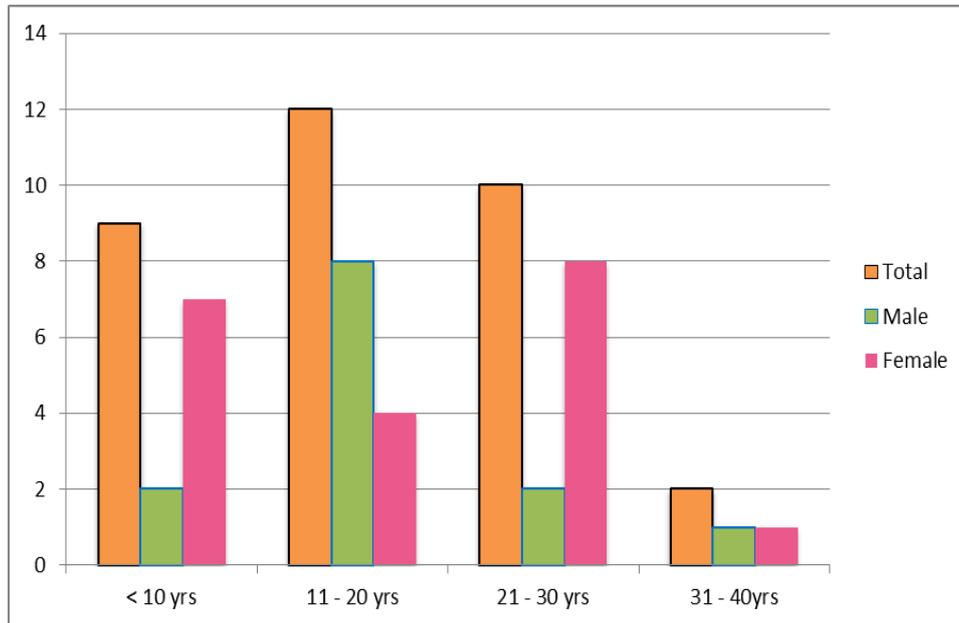


Fig. 1: Showing age & sex distribution in positive cases of Actinomycosis.

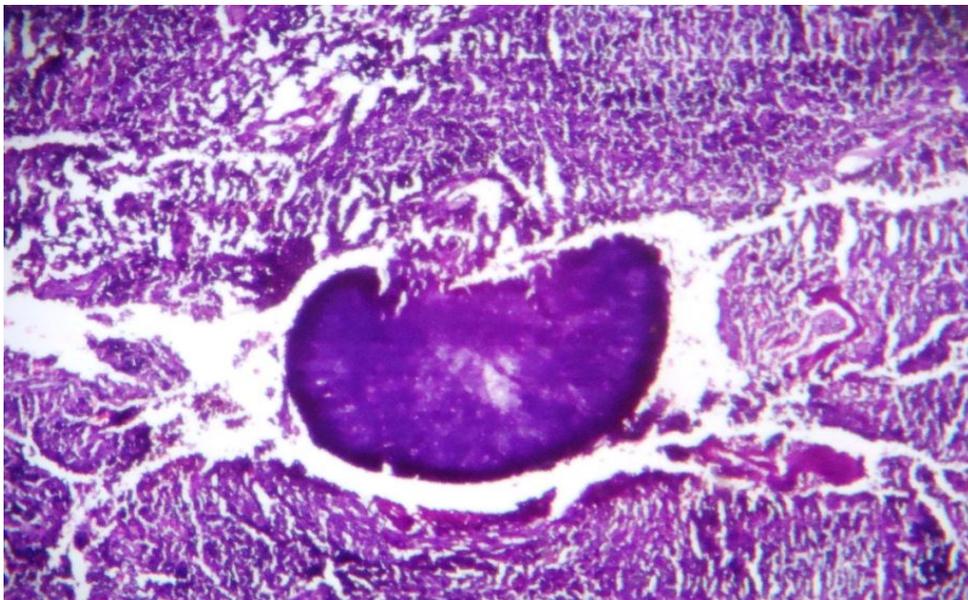


Fig. 2: H & E x 40: Actinomycotic colony in the crypt, surrounded by inflammatory changes (cryptitis).

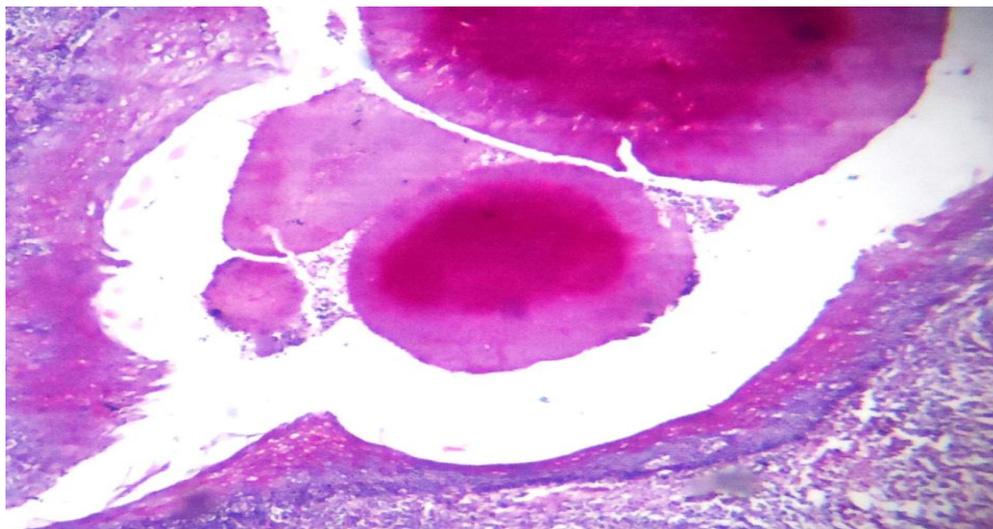


Fig. 3: PAS x 40: Actinomycotic colony in the crypt, stained by PAS stain.

DISCUSSION

The presence of Actinomyces in normal and diseased tonsils and its clinical significance in tonsillar crypts is controversial in the available literature sources. Actinomycotic infection has been reported in a small percentage of people presenting with chronic tonsillitis.^[1] The principal cause of human Actinomycosis is *A. israelii*. The Actinomyces are common saprophytic microorganisms which are found in the oral cavity and palatine tonsils^[2] and are found in 2% -30% of subjects.^[1,2,3,4,5] Precipitating factors are diseases in the cervicofacial region, which include dental caries, dental manipulations and maxillofacial trauma.^[6] Mucosal disruption of the tonsil is required for the bacteria to become infective in the tonsil. Pransky et al^[5] found that histological examination of the core tissues of the tonsils will accurately detect the presence of these organisms.

Gaffney et al^[3] reviewed 42 tonsils with Actinomycosis and found no correlation between the presence of Actinomycosis and tonsillar fibrosis or micro-abscesses, and concluded that Actinomycosis was present only as a saprophyte.

Van Lierop et al^[7] examined 344 tonsils and found no tissue reaction due to Actinomyces colonies and hence reported that there was no correlation between tonsillar Actinomycosis and recurrent tonsillitis. Toh et al^[8] examined 834 specimens and found no correlation between tonsillar hypertrophy and Actinomycosis. Both these reports showed no tissue reaction in spite of Actinomyces colonisation of tonsils. Contrary to the above reports, Aydin et al^[4] analysed 1820 tonsillectomy specimens and found the incidence of Actinomycosis to be 6.7% and reported that cryptitis was a common histopathologic indicator of tonsillar Actinomycosis. Assimakopoulos et al^[2] studied the histopathological sections of 238 tonsils and concluded that Actinomyces colonisation of the tonsillar crypts was significant in causing chronic tonsillitis. Ozgursoy et al^[9] suggested that Actinomyces colonisation could cause lymphoid

hyperplasia and obstructive tonsillar hypertrophy. Several other authors have also studied histopathological sections from tonsillectomy specimens and have arrived at similar conclusions. Actinomyces naeslundii is an integral part of dental plaque biofilms^[10] and effective elimination of the species with aggressive antibiotics and strict oral hygiene is essential for prevention of tonsillar hypertrophy and subsequent chronic tonsillitis due to Actinomyces colonization of the tonsils.

Malgerejo et al^[11] reported that the incidence of actinomycosis was more prevalent in patients aged 5- 16 years. Aydin et al. and Toh et al., also found actinomycosis more common in adults than in children.^{[4],[8]} Women are infected much less frequently than are men.^[12] On the other hand, Gaffney et al^[3], have found no gender preponderance of the tonsillar Actinomycosis in patients with recurrent acute tonsillitis.

SUMMARY

Our study has shown an incidence of 12%. The age group for peak incidence is from 10 – 30years (76%), which is slightly higher than that reported by Malgerejo et al.^[11] Our study has shown a female preponderance (61%), in variance with the report of Richtsmeier WJ et al.^[12] Unilateral involvement of tonsil was more common than bilaterality as has been observed by all. There is no side predilection. Actinomycotic colonies were often seen in association with cryptitis, and were seen associated with necrotic cellular debris and inflammatory cells. However, there is no association with invasive actinomycosis in any of the cases.

CONCLUSION

In our study, presence of Actinomyces colonies in tonsillar specimens is more of an incidental finding and did not require chemotherapy for the same, post operatively. However, as it is a true pathogen and is residing in tonsils in a saprophytic state, attention to oral hygiene, regular follow up checkups for a probable

dissemination to lungs prior to removal, is desirable in all cases of tonsillar actinomycosis.

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: 163–168.
2. Assimakopoulos D, Vafiadis M, Askitis P, et al. The incidence of *Actinomyces israelii* colonization in tonsillar tissue. A histopathological study. *Rev Stomatol Chir Maxillofac*, 1992; 93: 122–126.
3. Gaffney R, Harrison M, Walsh M, Sweeney E, Cafferkey M. The incidence and role of actinomyces in recurrent acute tonsillitis. *Clin Otolaryngol Allied Sci.*, 1993; 18: 268-271.
4. Aydın 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 (Bord)*, 2005; 126: 95-8.
5. Pransky SM, Feldman JI, Kearns DB, Seid AB, Billman GF. Actinomycosis in obstructive tonsillar hypertrophy and recurrent tonsillitis. *Arch Otolaryngol Head Neck Surg*, 1991; 117: 883-5.
6. Belmont MJ, Behar PM, Wax MK. Atypical presentations of actinomycosis. *Head Neck*, 1999; 21: 264–8.
7. Van Lierop AC, Prescott CA, Sinclair- Smith CC. An investigation of the significance of Actinomycosis in tonsil disease. *Int Journal Pediatr Otorhinolaryngol*, 2007; 71: 1883-8.
8. 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: 775-8.
9. Ozgursoy OB, Kemal O, Saatci MR et al. Actinomycosis in the etiology of recurrent tonsillitis and obstructive tonsillar hypertrophy: answer from a histopathologic point of view. *J Otolaryngol Head Neck Surg*, 2008; 37: 865-9.
10. Itisha Singh, P.C. Jain Current status of Dental plaque *Int J Pharm Bio Sci.*, 2012 July; 3(3): (B) 669–681.
11. Melgarejo Moreno P, Hellin Me- seguer D, Marco Garrido A, Galindo Ortego X, Ruiz Macia JA, Hostalet F. A correlation between age and *Actinomyces* in the adenotonsillar tissue in children. *B-ENT*, 2006; 2: 95- 7.
12. Richtsmeier WJ, Johns, ME. Actinomycosis of the head and neck. 1979. *CRC Crit Rev Clin Lab Sc.*, 11: 175-202. (PMID: 389552).