

A prospective and retrospective study of actinomycosis in last five years at Manipal Teaching Hospital, Pokhara, Nepal

Talwar OP, Ghosh A, Pradhan S, Swami RM, Shivraj KC

Department of Pathology, Manipal College of Medical Sciences, Pokhara, Nepal

Abstract

Objective: The study was carried out to determine the clinical and morphological presentation of actinomycosis and its association with malignancy and other opportunistic infections.

Material and Methods: A prospective and retrospective study of cases was done from January 2001 to December 2006 (5 years) in the department of pathology.

Result: Total 19 cases of actinomycosis were found during this period. Patients presented with discharging sinus and non-healing superficial abscess. Out of 19 cases, three cases were associated with malignancy, two cases were associated with aspergillosis while one case was clinically misdiagnosed as malignancy. All cases were diagnosed pathologically except a case of maxillary sinusitis which was initially suspected as fungal sinusitis by CT scan. Since actinomycosis is often misdiagnosed it is important to know the clinical presentation and morphological features of actinomycosis for correct management.

Conclusion: The clinical features and histopathological findings of actinomycosis are important to understand for its correct diagnosis and better management of patient.

Key words: Actinomycosis, fungus

Actinomycosis has been called as “the most misdiagnosed disease” even by experienced clinicians and listed as a “rare disease” by the Office of Rare Diseases (ORD) of the National Institutes of Health (NIH). Human actinomycosis was first described in the medical literature in 1857, although a similar disease in cattle had been described in 1826. Aktino referred to the radiating organism in the sulphur granule as ray fungus. The unique nature of the organism is the absence of a nuclear membrane, which places *Actinomyces* species among the higher prokaryotic bacteria. Actinomycosis is a slowly growing chronic infection, commonly of the face and neck, which produces abscess and open draining sinuses. It is caused by an anaerobic gram positive bacterium called *Actinomyces israelii*, which is a common and normally found commensal in nose and throat. *Actinomyces* produces disease when it is introduced into tissues by trauma, surgery, or infection. Other causative organisms include *Actinomycosis naeslundii*, *Actinomycosis viscosus*, *Actinomycosis meyeri*, *Actinomycosis gerencseriae* and *Propionibacterium propionicum* (1). Actinomycosis commonly involves colon, mouth and vagina. Actinomycosis can occur at all ages of life with a peak in middle ages. Estimation of the exact incidence of actinomycosis is difficult, because there are probably many undiagnosed cases of actinomycosis. The incidence of actinomycosis is more in patients with poor dental hygiene and in

IUCD users. In a study done by Chatwani et al, out of 1520 IUCD users 173 patients were affected by actinomyces with a colonization rate of 11.4 % (2).

Material and methods

This is a prospective and retrospective study of five years in which review of all the cases diagnosed as actinomycosis was done in Manipal Teaching Hospital, Phulbari, Pokhara from January 2001 to December 2006 (5 years). Data were collected and analyzed.

Correspondence

Dr. Ravi M. Swami,
Lecturer, Dept of pathology,
Manipal Teaching Hospital,
Pokhara, Nepal.
Mobile no – 9846065665 .Fax no – 00977-61-527862.
E-mail: ravimswami@rediffmail.com

Results

There were a total of 19 cases of actinomycosis. The ages of the patients ranged from 9 to 72 years with a peak in the third and fourth decade. The age distribution is shown below in **Fig 1**.

The incidence of actinomycosis was slightly more in males (10/19 cases) as compared to females (9 /19cases) It is shown in **Fig 2**.

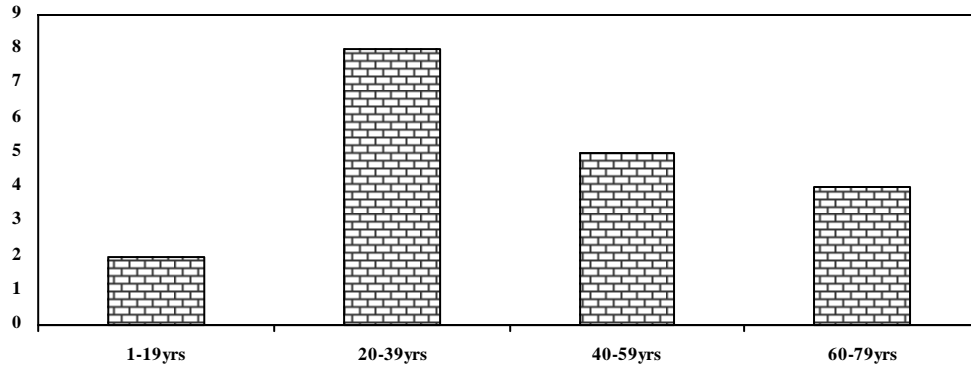


Fig 1: Age wise distribution of actinomycosis

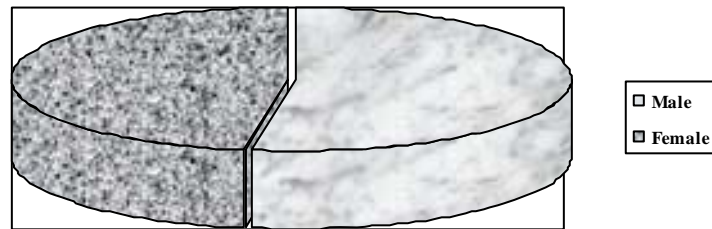


Fig 2: Sex wise distribution of actinomycosis (M>F)

The commonest site involved by actinomycosis was tonsil (5 cases) followed by maxilla (2 cases), thigh (2 cases), oral cavity (2 cases), sole (2 cases) and other sites like tongue, oesophagus, larynx, cervical lymph node, submandibular gland and skin of anterior chest wall (one case each).

Clinical presentation

Patients with actinomycosis show different clinical manifestations depending on site, size and organ involved. Most of the patients were asymptomatic while others presented with discharging sinus, nasal obstruction, difficulty in swallowing, sore throat and painful mass. All were diagnosed by histopathology except one case which was initially suspected as non-

invasive fungal sinusitis of right maxillary sinus by CT scan. Out of 19 cases 3 were associated with malignancy, namely squamous carcinoma of larynx, squamous carcinoma of oesophagus and mucoepidermoid carcinoma of parotid gland. In another two cases actinomycosis was associated with aspergillosis which is another opportunistic infection. One case of oral cavity actinomycosis was clinically diagnosed as carcinoma of retromolar trigone which was diagnosed as actinomycosis on histopathology. Histopathological examination showed numerous basophilic colonies of actinomycosis along with aspergillosis as shown in fig.3. Fig. 4 showing actinomycosis in a case of squamous carcinoma.

Microscopic photographs

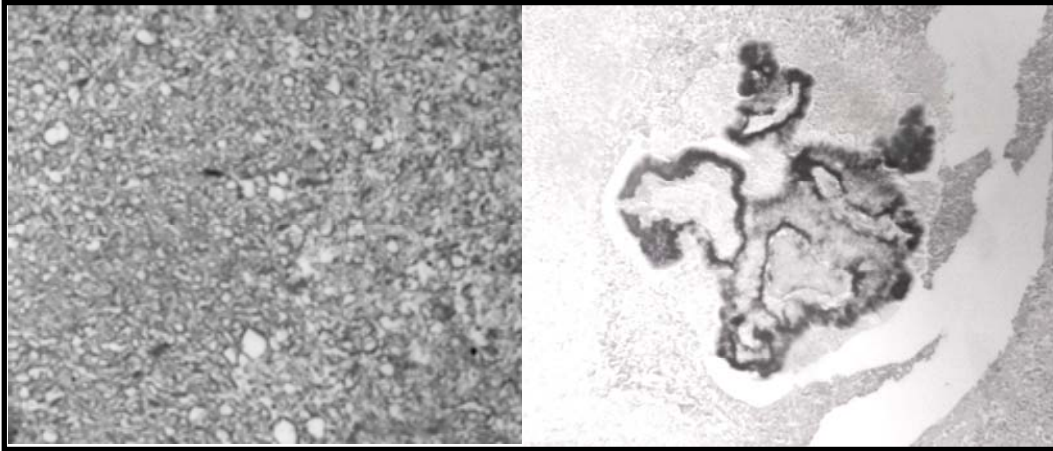


Fig 3: Aspergillus hyphae (40X) on left and actinomyces colonies in a necrotic background on right (4X), H&E stain

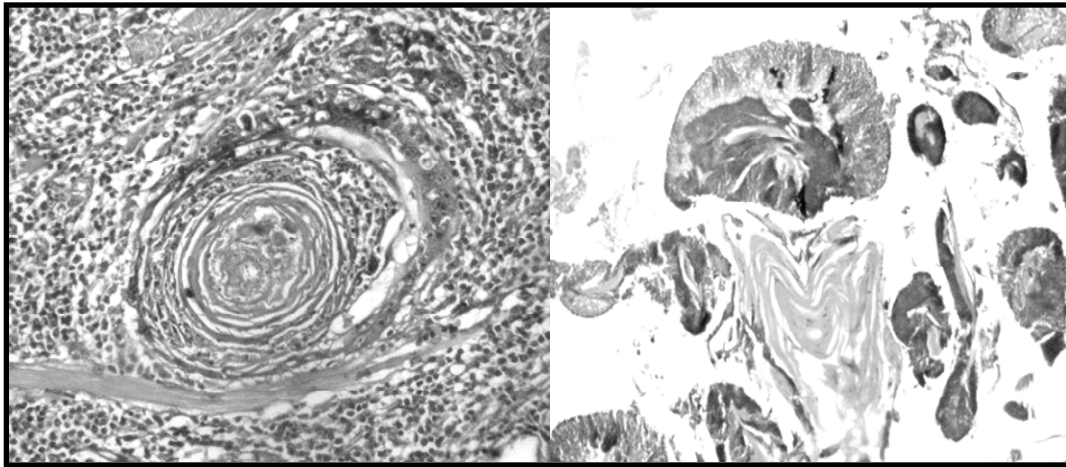


Fig 4: Squamous carcinoma showing classical keratin pearl on left (40X) with actinomyces colonies on right (40X), H & E stain.

Discussion

The etiologic agents of actinomycosis are members from normal oral flora, gastrointestinal tract and female genital tract. The infection begins as an inflammatory soft tissue mass, which can enlarge into an abscess like swelling, with penetration of the overlying skin which mimics malignancy. In the literature actinomycosis was reported from many sites like abdominal wall, pelvis^{3,4}, stomach and small intestine^{5,6} as in present study. Clinically actinomycosis can present as a tumour mass and may

be misdiagnosed as malignancy as seen in case of actinomycosis oral cavity in the present study. Similar cases are reported in literature in which actinomycosis mimic not only primary malignancy but sometimes even metastasis^{7,8}. A mass that may mimic either benign or malignant neoplasms can be seen at clinical presentation and may mislead clinicians. In the literature actinomycosis was found to be associated with malignancy of several sites like submandibular gland, larynx, oral cavity and many other sites^{9,10}. Similar association was also

found in the present study. Clinical presentation of cervico-facial actinomycosis is characterized by the presence of an indurative mass with discharging sinus. Pus from the discharging sinuses contains tiny yellow sulphur granules, which are diagnostic¹¹. Ultrasound and radiological investigations fail to differentiate them from malignancy, although conventional sialography or computerised tomography (CT) with sialography has been suggested to present a consistent pattern in infections¹². A CT scan finding of soft tissue and bony invasion, simulating malignant neoplasm, helps in distinguishing actinomycosis from other suppurative or granulomatous masses. One case of actinomycosis was suspected by CT scan in the present study. As per treatment is concerned drug of choice is penicillin or tetracycline. Anaerobic cultures may be helpful in selecting the appropriate antibiotic in refractory cases. Treatment is essentially medical with adjuvant surgical procedures like incision and drainage, and wound toilet¹³. Thus correct diagnosis and management of actinomycosis provides cure to patient.

Conclusion

Since actinomycosis is a rare disease and many times mimic malignancy or sometimes associated with malignancy it is important that one should know the correct clinical presentation, morphological features and histopathological findings to arrive at correct diagnosis for better management of patient.

References

1. Russo TA - Actinomycosis. In: Harrison's Principles of Internal Medicine. Vol1. 12th ed (Edited by: Fauci AS, Braunwald E, Isselbacher KJ). New York: Mc Graw-Hill Inc, 1983: 185.
2. Chatwani A, Amin-Hanjani S - Incidence of actinomycosis associated with intrauterine devices J Reprod Med 1994 Aug;39(8):585-7.

3. Tseng CK et al - A case report of abdominal actinomycosis. *Jurume Med J* 1965;12:168-172.
4. Turnbull AE, Cohen MEL - Case report - Pelvic actinomycosis with the development and resolution of a rectosigmoid stricture. *Clin Radiol* 1991; 43: 420-422.
5. Urdaneta W - Intramural gastric actinomycosis. *Surgery* 1967; 62: 431-435.
6. Wheeler H - Actinomycosis of duodenum and jejunum. *Br J Surg* 1927;15: 430-437.
7. Valles Fontanet J, Oliva Izquierdo T - Actinomycosis of the tonsils with a pseudotumoral presentation: a clinical case. *Acta Otorrinolaringol Esp* 1995 Nov-Dec; 46(6): 444-6.
8. Chin-yew lin, Shyh-Chuan Jwo, Cheng-Chia Lin - Primary testicular actinomycosis mimicking metastatic tumour. *International Journal of Urology* 2005; 12: 519-521.
9. Barabas J, Bogdan S, Suba Z, Szabo G, Lukats O, Decker I, Huszar T - Parotid gland Warthin's tumour combined with actinomycosis. *Acta Otorrinolaringol Esp*. 1995 Nov-Dec; 46(6):444-6.
10. Silvestri SB, Carrau RL, Peel R, Hunt JL - Spindle cell carcinoma of the larynx with actinomyces chondritis of the larynx and trachea. *Otolaryngol Head Neck Surg*. 2006 Feb; 134(2):345-7.
11. Chandler F W , Watts J C – Fungal diseases . In : Damjanov I , Linder J editors – Anderson's Pathology . Vol 1 . 10 th ed . Missouri : Mosby , 1996: 9975-976.
12. Sa'do B, Yoshiura K, Yuasa K, Arijji Y, Kanda S, Oka M, Katsuki T - Multimodality imaging of cervicofacial actinomycosis. *Oral Surg Oral Med Oral Pathol* 1993; 76(6):772-782.
13. Hopkins R - Primary actinomycosis of the parotid gland. *Br J Oral Surg* 1973; 11(2):131-138.