



Actinomycosis in Iran: Short Narrative Review Article

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Abstract

Actinomycosis is an indolent, slowly progressive infection caused by anaerobic or microaerophilic bacteria, primarily of genus *Actinomyces*, which colonize the mouth, colon and vagina. Mucosal disruption may lead to infection virtually at any sites in the body. The aim of this study was to underline different features of actinomycosis and to represent total data about etiologic agents, clinical, diagnostic and therapeutic approaches these infections. From a total of 38 case reports or series, ninety one cases were obtained by using of relevant articles reported as recorded cases in Iran (1972 to 2012). Analyzed data represented 21 cases of oral-servicofacial (23.1%), 7 cases of thoracic (7.7%), 17 cases of abdominal (18.7%), 21 cases of disseminated forms (23.1%) and 25 cases of others (27.5%). Findings indicated more common of these infections in men (61.5%). *Actinomyces naeslundii* (21 cases) was found as the most common causative agents in comparison with *A. Israeli* (15 cases), *A. viscosus* (3 cases) and *A. bovis* (1 case). The most patients had been successfully treated with penicillin although some cases needed surgery along with antibiotic therapy. Since some clinical features of actinomycosis are similar to malignancies, so the differential diagnosis of invasive forms must be considered. This report emphasizes on the importance of differential diagnosis of actinomycosis from similar diseases by clinicians.

Keywords: Actinomycosis, *Actinomyces*, Epidemiology, Iran

Introduction

Actinomycosis is a painless chronic granulomatous or suppurative infection caused by anaerobic or microaerophilic bacteria named genus *Actinomyces* (1). These organisms are normal flora of mouth, colon and vagina which colonized these sites (2). Mucosal demolition can cause the infection at these sites in the body. In vivo growth of *Actinomyces* usually results in the formation of characteristics clumps called grains or sulfur granules.

Clinical presentations due to creation of mass-like features can be confused with malignancies (3). Clinical features of actinomycosis include 50-60% oral-cervicofacial, 15-20% thoracic, 20-30% abdomino-pelvic, and 5-6% disseminated forms (4). The portal entrance of *Actinomyces* species is

typically a break in the mucosa of the gastrointestinal tract, anywhere from the mouth to the rectum; such a break may occur as a result of a dental procedure, overt or covert dental sepsis, bacterial suppuration, diverticulitis, appendicitis, surgery, or trauma (5).

Actinomycosis has been reported more frequently in patients with underlying diseases and factors such as poor oral hygiene and careless dental surgery in cervicofacial, lung disorders like bronchiectasis or emphysema in thoracic form, disruption and trauma of the bowel mucosa by any way such as surgery, ingestion of sword fish and also using of Intra Uterine Device (IUD) in abdomino-pelvic forms and hematogenous dissemination of

organism from the thorax or vagina through the cervix or other sites in disseminated form (6).

Diagnosis was based on radiography, CT scan, biopsy and laboratory diagnostic methods such as histopathology study, direct examination and culture. Since some clinical and laboratorial findings of actinomycosis can be confused with some malignancies or other infectious diseases, it should be considered (1).

The aim of this study was to underline different features of actinomycosis and to represent total data about etiologic agents, clinical, diagnostic and therapeutic approaches these infections.

Methods

From a total of 38 case reports or series, ninety one cases were obtained by using of relevant articles reported as recorded actinomycosis cases in Iran (1972 to 2012). Recorded cases were obtained using the Medline and Iranian databases (IranDoc, Iran Medex and Magiran). The data obtained from all of case reports studies related to actinomycosis cases were analyzed. These cases were considered by focusing on diagnosis, etio-

logic agents, clinical features, radiological finding, and therapeutic intervention. Diagnosis was based on radiography, CT scan, biopsy and laboratory diagnostic methods such as histopathology study, direct examination and culture.

Results

Actinomycosis cases including 56 males (61.5%) and 35 females (38.5%) were identified during this retrospective study (Table 1). Findings included 21 (23.1%) oral–servicofacial cases, 7 (7.7%) thoracic cases, 17 (18.7%) abdominal cases, 21 (23.1%) disseminated form cases and 25 (27.5%) other cases. Among the identified species, *A. naeslundii* was the most common. By following up, it was cleared that patients had been treated with high-dose antibiotics, although some cases needed surgery along with antibiotic therapy. Some intravenous or oral antibiotics had been used for treatment actinomycosis in these patients such as penicillin G, ampicillin, amoxicillin, erythromycin, aminoglycosides and cephalosporin.

Table 1: Frequency of actinomycosis cases according to the age, sex, clinical features and etiologic agents

Age groups	Frequency		Total (%)	Clinical features (N)					Etiologic agents			
	Male (%)	Female (%)		Oral cervicofacial	thoracic	abdominal	disseminated	others	<i>A. naeslundii</i>	<i>A. israelii</i>	<i>A. viscosus</i>	<i>A. bovis</i>
0-10	7 (7.7)	1 (1.1)	8 (8.8)	0	2	0	0	6	0	3	0	0
11-20	6 (6.6)	1 (1.1)	7 (7.7)	2	1	2	0	2	0	1	0	1
21-30	8 (8.8)	7 (7.7)	15 (16.5)	3	0	4	3	5	2	4	1	0
31-40	12 (13.2)	10 (11)	22 (24.2)	8	0	5	3	6	3	4	2	0
41-50	14 (15.3)	9 (9.9)	23 (25.3)	5	1	6	7	4	8	3	0	0
51-60	4 (4.4)	6 (6.6)	10 (11)	3	0	0	6	1	7	0	0	0
61-70	4 (4.4)	1 (1.1)	5 (5.5)	0	3	0	1	1	1	0	0	0
71-80	1 (1.1)	0 (0)	1 (1.1)	0	0	0	1	0	0	0	0	0
Total	56 (61.5)	35 (38.5)	91 (100)	21	7	17	21	25	21	15	3	1

Discussion

Classic actinomycosis is a chronic, granulomatous infection that invades tissue planes and is characterized by abscesses, woody fibrosis, and sinus discharge of characteristic sulfur granules. The clinical features of actinomycosis include oral–cervicofacial, thoracic, abdomino-pelvic and disseminated forms. *Actinomyces* species which belong to order actinomycetales, are gram positive anaerobic to microaerophilic, non-motile, non-sporeforming and non-acid fast bacteria up to 1 µm in diameter (7). The most common species which cause actinomycosis are *A. israelii*, *A. naeslundii*, *A. viscosus* and *A. meyeri* (8).

In the present study, during forty years, 38 case reports were reported as actinomycotic patients in Iran. The most and least cases of actinomycosis belonged to the age groups 41-50 and 71-80 years respectively. However previous reports have shown that actinomycosis can affect people of all ages, but the majority of cases are reported in young to middle-aged adults (20-50 yr) (9). In our study, the most common cases belonged to age groups 41-50 yr in men and 31-40 in women.

For unknown reasons, men are affected more commonly rather than women, with the exception of pelvic actinomycosis. Previous study reported male-to-female ratio as 3:1 (9). In the present study, the prevalence of clinical forms included oral–cervicofacial, 21 cases (23.1%) (10-21); thoracic, 7 cases (7.7%) (22-26); abdominal, 17 cases (18.7%) (27-31); disseminated, 21 cases (23.1%) (32) and others, 25 cases (27.5%) (7, 8, 33-40). The most common oral cervicofacial forms were in age group 31-40 yr, thoracic in 61-70, abdominal in 41-50, disseminated in 41-50 and others in both age group of 0-10 and 31-40 yr. Due to limitation of diagnostic in laboratory, usually the most cases were identified just to genus in the past.

In the present study, the most common etiologic agents related to *A. naeslundii* (21 cases) from bone marrow biopsies in hematological malignancies (32) also, 15 cases of *A. israelii* isolated from different clinical forms of actinomycosis and 3

cases of *A. viscosus*, and 1 case of *A. bovis* (7, 8, 10, 22, 23, 27, 28, 33). Due to lack of access to data about patients' occupation it was not possible considering of this variable in incidence of actinomycosis.

Baroukhian et al. reported 28 cases of cervicofacial, thoracic, disseminated and the other forms of actinomycosis from different parts of Iran referred to the Pathological Laboratory, Faculty of Medicine, University of Tehran (11). Tabibi et al. reported 2 cases of oral cervicofacial actinomycosis due to *A. israelii* in two men referred to Clinical Laboratory, Faculty of Medicine, University of Tehran (12). Daie Ghazvini et al. reported the first case of breast actinomycosis due to *A. israelii* from the breast of a 31 year-old female nurse from Shahrekord of Iran (8). Mobedi et al. studied on hematological malignancies patients and reported 21 cases *A. naeslundii* from bone marrow biopsies in 13 women and 8 men (32). Daie Ghazvini et al. reported one case of *A. viscosus* isolated from skin lesions in a 22 year-old man, a hospital staff, from Tehran with a history of skin injury due to thorn of plant (7). Eshraghi isolated two strains of *A. viscosus* and *A. israelii* in 3 patients (2 men, 1 woman) suffering from progressive periodontitis and dent alveolar abscess (10).

Conclusion

Actinomycosis is a chronic rare but important disease with excellent prognosis whereas treated immediately. As it is an endogenous disease, there is no risk of person to person transmission. This is an important message for health personnel & patient attendants e.g. relatives. To minimize delays in diagnosis, actinomycosis should be considered in the differential diagnoses of any inflammatory lesions. Therefore, it is recommended that physicians should consider the possibility of actinomycosis.

Ethical considerations

Ethical issues (Including plagiarism, Informed Consent, misconduct, data fabrication and/or

falsification, double publication and/or submission, redundancy, etc) have been completely observed by the authors.

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The authors declare that there is no conflict of interests.

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