Pulmonary Actinomycosis : A Study of 16 Cases from Central Chest Hospital

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Abstract

Actinomycosis is a relatively rare infection. This is a report of 16 patients with pulmonary actinomycosis diagnosed from 1990 to 1997 at the Central Chest Hospital, Thailand. Twelve patients were male and 4 were female, with a mean age of 59 years and a mean duration of symptoms of 9 months. Common symptoms were cough and hemoptysis. Mass-like shadowing was the most common radiographic finding (37%). The diagnosis, based on findings of typical sulfur granules, was reached by bronchoscopy (10 cases), surgery (5 cases) and fine needle aspiration (1 case). Endobronchial mass with luminal occlusion was the most frequent bronchoscopic finding (56%). Coexistent bronchial carcinoma was present in one specimen. Penicillin was given in 10 patients, 2 of whom (20%) were cured, 5 (50%) are currently on treatment and have achieved clinical response, whereas, the other 2 patients (20%) did not respond. Surgical resection was performed in 8 patients, all of whom recovered. An awareness of the full spectrum of actinomycosis manifestations will expedite diagnosis and optimize treatment.

Key word : Actinomycosis, Lung Mass, Lung Cancer

Actinomycosis is a chronic suppurative infection primarily caused by Actinomyces israelii. A. israelli are oropharyngeal inhabitants and are frequently present in dental caries or gingival plaques. Human diseases take three distinct forms, namely, oral-cervicofacial, pleuropulmonary, and abdominal diseases(1).

Timely recognition of this disease is uncommon such that it has been called "the most misdiagnosed disease"(2). An awareness of the full

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spectrum of disease manifestations will expedite diagnosis and treatment and minimize the unnecessary morbidity and mortality that all too often occurs with actinomycosis[1].

Pulmonary actinomycosis is relatively rare. Several clinical presentations are recognized, e.g. mass simulating lung cancer, lung abscesses etc[3-6]. Prompt diagnosis is tantamount to successful treatment and requires a high index of awareness of the clinical entity[7]. Previous reports from Thailand on actinomycosis have been anecdotal, each involving only a few patients[8,9]. More information is crucial for the awareness to be raised and the outcome improved.

We, therefore, report clinical presentations, roentgenographic features, bronchoscopic findings and treatment outcome of 16 patients with pulmonary actinomycosis diagnosed from 1990 to1997 at the Central Chest Hospital.

METHOD

The medical records of all the patients with actinomycosis from 1990 to 1997 at the Central Chest Hospital were systematically reviewed. Data on demographics, clinical presentations, roentgenographic findings, bronchoscopic features, response to treatment, and outcome were collated using a predesigned form.

The diagnosis of actinomycosis was based on the findings of typical sulfur granules in bronchial biopsy, needle aspirate or surgical specimen. The line of investigation was as per standard manner. All the patients with lung mass on chest radiograph underwent fibreoptic bronchoscopy. In addition, bronchoscopy was done on patients with unresolved pneumonia. Fine needle aspiration under CT guidance was performed in cases with a peripheral lesion.

RESULTS

Sixteen patients had pulmonary actinomycosis during the mentioned period. Twelve patients were male and four were female. The mean age was 59 years. Table 1 summarizes the symptoms. Cough was always present and hemoptysis was common. Fever was evident in five patients. Duration of symptoms varied from two weeks to five years with an average of 9 months. Six patients had diabetes mellitus, one had previous pulmonary tuberculosis, and another one had associated squamous cell carcinoma.

Table 1. Clinical presentations.

	Number	Per cent
Cough	16	100
Hemoptysis	10	62
Fever	5	31
Weight loss	4	25
Underlying disease		
Diabetes mellitus	6	37
Previous pulmonary TB	1	6
Bronchial carcinoma	1	6

Table 2. Roentgenologic features.

	Number	Per cent
Infiltration		
Mass-like	6	37.5
Patchy	2	12.5
Small cavitary lesions	2	12.5
Consolidation with volume loss	2	12.5
Collapse	2	12.5
Pleural effusion	1	6.25
Lung abscess	1	6.25

Roentgenographic features

Chest roentgenographic features are listed in Table 2. Mass like shadowing was the most common feature, presenting in six patients (Fig. 1). Patchy infiltrates were observed in two patients and small cavitary lesions were noted in two patients. Consolidation was evident in four cases. Atelectasis was seen in two cases (Fig. 2). Lung abscess and a pleural effusion were present in one case each.

Bronchoscopic findings

Bronchoscopic findings are listed in Table 3. Endobronchial mass with luminal occlusion was the main finding. There were seven necrotic masses. One mass appeared yellowish and another one whitish. Histologic findings consistent with actinomycosis from biopsy lesions were described in seven patients. Luminal narrowing was seen in three patients in whom transbronchial lung biopsy (TBLB) showed chronic inflammation in two specimens and interstitial fibrosis in another one. Two patients showed purulent discharge from affected bronchus and TBLB confirmed actinomycosis in one specimen. One patient had ectatic change and the remaining one had normal findings.

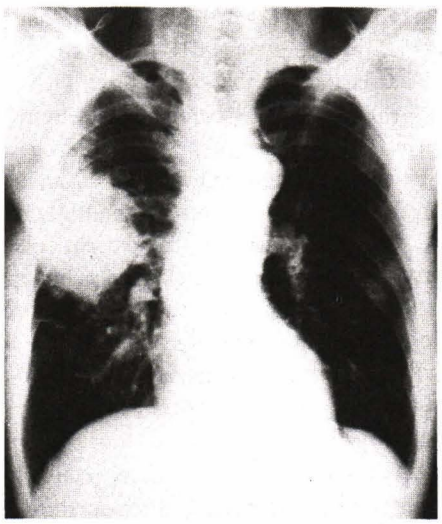

Fig. 1. Chest roentgenograph show mass like shadowing in right upper lung zone.

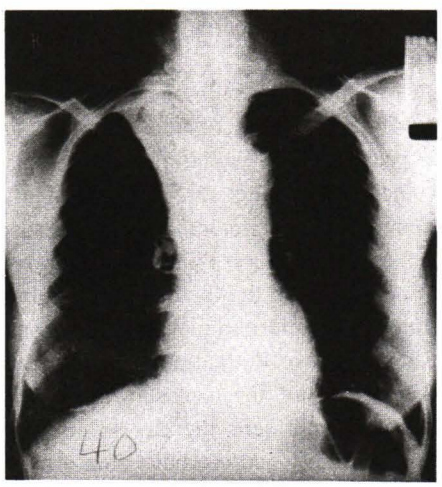

Fig. 2. Chest roentgenograph show atelectasis of right upper lobe.

Table 3. Bronchoscopic findings.

	Number	Per cent
Endobronchial mass		
Necrotic	7	43.75
Whitish	1	6.25
Yellowish	1	6.25
Luminal narrowing	3	18.75
Purulent discharge	2	12.50
Ectatic change	1	6.25
Normal	1	6.25

Treatment and outcome

All the patients whose diagnosis was established by bronchoscopy received treatment with high dose intravenous penicillin. Two patients required surgical removal because one had recurrent hemoptysis and the other was allergic to penicillin rendering medical treatment inadequate. Five patients are currently on treatment and are clinically improved. All the six patients who were not diagnosed by tissue biopsy proceeded to surgery. Four had clinical and roentgenogram consistent with lung cancer, two had bronchiectasis failed to respond to medical treatment. All were proved to have actinomycosis by surgical specimen and gained cure from surgical procedure during the follow-up period ranging from 1 month to 3 years.

DISCUSSION

Actinomycosis is considered rare. The true incidence is difficult to ascertain since it is seldom mentioned in Thailand. Not surprisingly, it has been stated that there is no other disease which is so often missed by experienced clinicians[10]. We have described a series of 16 patients with pulmonary actinomycosis diagnosed at a thoracic centre over an 8-year period. Several issues merit discussion.

Although actinomycosis is usually caused by A. israellii, other members of the genus Actinomyces are also responsible for human diseases including A. naeslundii, A. odontolyticus, and A. viscosus[11-13]. They are slow growing, filamentous, branching, gram positive bacteria which grow anaerobically but may be microaerophillic[1].

Actinomycosis occurs in patients with poor dental hygiene, diabetes mellitus, on immunosuppressive drugs, or chronic obstructive airways disease[14]. In our series there were six patients with diabetes mellitus (37.5%) and one (6.25%) with previous pulmonary tuberculosis. Clinical presentations were non-specific. It may mimic a wide variety of pulmonary disorders including unresolved pneumonia, nocardiosis, tuberculosis, bronchial carcinoma, cryptococosis or histoplasmosis[3,4,15,16].

Several roentgenographic features are described, including mass lesions, atelectasis, air-fluid cavitary lesions, and effusions[17,18]. The majority in our series were mass like lesions (37.5%) whereas lung volume loss, pneumonic consolidation and lung abscess were noted in 25, 12.5, and 6.25 per cent respectively.

Bronchoscopy was performed in all the patients in our series. The indications were to exclude malignancy in 11 patients, massive hemoptysis in three and unresolved pneumonia in two patients. In line with previous reports, the main bronchoscopic findings were endobronchial mass with or without necrotic surface simulating bronchial carcinoma[3,4]. Three patients showed luminal narrowing by external compression. Two patients showed purulent discharge from affected segment indicative of infections. One patient showed ectatic change. However, the findings were normal in one patient.

The diagnosis of actinomycosis depends on demonstration of the characteristic histopathology and culture of organism from a tissue biopsy or exudates (e.g. pleural fluid, transtracheal aspiration, transbronchial biopsy, abscess aspirate). Positive cultures of organism are obtained in only about 50 per cent of cases owing to overgrowth of synergistic bacteria, improper anaerobic cultures, or prior antibiotic treatment which suppresses otherwise viable organism[19]. Anaerobic cultures were not feasible in our setting; hence, the diagnosis was made by identification of typical sulfur granules demonstrated in ten specimens taken from biopsy under bronchoscopy, five specimens from surgical procedure and one from fine needle aspiration under CT guidance. Yield of bronchoscopic diagnosis was 62.5 per cent. Indeed, the diagnosis of actinomycosis dose not rule out a coexistent carcinoma and this coincidence has been documented in one of our series[20].

The mainstay of treatment is high dose intravenous penicillin for 2-6 weeks, followed by oral therapy with penicillin or amoxicillin for 6-12 months[1,19]. Erythromycin, minocycline, tetracycline, and clindamycin are suitable alternatives[21, 22]. Penicillin was given in 10 patients whose diagnosis was reached by bronchoscopy. Two patients were (20%) successfully cured. Two patients (20%) did not respond to treatment and required surgical resection due to recurrent hemoptysis and another one developed drug fever at one month and gained no radiographic improvement. Five patients (50%) are currently on treatment and have achieved clinical response. The patient with coexistent bronchial carcinoma had poor general condition at diagnosis and did not tolerate medical treatment. For the six patients whose diagnosis was not detected by bronchoscopy, surgical intervention was performed to rule out malignancy in four patients and for bronchiectasis in two patients. All of them showed typical histology of actinomycosis and were cured. No patient in this study had a discharging sinus tract with destruction of lung parenchyma and chest wall. This might be attributed to an early diagnosis with appropriate procedure thereby preventing unwanted sequelae.

In conclusion, pulmonary actinomycosis is an important chronic infection producing a variety of clinical presentations including lung mass, unresolved pneumonia, lung abscess, pleural effusion. Coexistent bronchial carcinoma should be suspected in case of medical failure. Pulmonary actinomycosis should be included in the list of differential diagnosis of lung mass and chronic pleuropulmonary infection unresponsive to treatment. An awareness of the full spectrum of the disease will expedite the diagnosis and treatment thereby minimizing unnecessary morbidity and mortality that often occurs with actinomycosis.

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ปอดอักเสบจากแอ็คติโนมัยโคสิส : การศึกษาในผู้ป่วย 16 ราย

ทวีเกียรติ ดุจหนึ่งคุณากร, พ.บ., ว.ว.,*
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ปอดอักเสบจากแอ็คติโนมัยโคสิส เป็นโรคที่พบไม่บ่อย. อาการแสดงและลักษณะทางรังสีวิทยาอาจคล้ายกับโรคปอดชนิดอื่นได้. คณะผู้รายงานจึงได้รวบรวมศึกษาข้อมูลของผู้ป่วยที่ได้รับการวินิจฉัยว่าเป็นโรคแอ็คติโนมัยโคสิสของปอด ในโรงพยาบาลโรคทรวงอกตั้งแต่ปี พ.ศ. 2533-2540. ผู้ป่วยเป็นเพศชาย 12 คนและเพศหญิง 4 คน. ลักษณะทางรังสีวิทยาที่พบมากที่สุดคือเงาปื้นคล้ายก้อน. ผู้ป่วยทุกรายได้รับการตรวจด้วยกล้องส่องตรวจหลอดลม ลักษณะที่พบมากคือก้อนเนื้ออุดเต็มหลอดลม 56%. พบลักษณะเม็ดกำมะถัน ซึ่งจำเพาะต่อโรคแอ็คติโนมัยโคสิส จากชิ้นเนื้อที่ได้จากการส่องตรวจหลอดลม 10 ราย (62%) จากการผ่าตัด 5 ราย (31%) และจาก needle aspirate 1 ราย (6%). พบว่ามีมะเร็งร่วมอยู่ด้วย 1 รายจากชิ้นเนื้อที่ได้จากการส่องตรวจหลอดลม. ผู้ป่วย 10 รายได้รับยาเพนิซิลลินในขนาดมาตรฐาน. ผลการรักษาหายขาด 2 ราย (20%), ผู้ป่วย 5 รายกำลังให้การรักษามีอาการดีขึ้น, ส่วนผู้ป่วยอีก 2 รายนั้นไม่ตอบสนองต่อการรักษา. ผู้ป่วย 5 รายที่ไม่ได้รับการวินิจฉัยจากการส่องตรวจหลอดลม และผู้ป่วยที่ไม่ตอบสนองต่อเพนิซิลลินได้รับการผ่าตัดปอด ทุกรายมีอาการหายดี

คำสำคัญ : แอ็คติโนมัยโคสิส, ก้อนในปอด, มะเร็งปอด

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