CASE REPORT

PULMONARY ACTINOMYCOSIS PRESENTING WITH PROLONGED FEVER AND MASSIVE HEMOPTYSIS: A CASE REPORT

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Abstract. We present a rare case of pulmonary actinomycosis complicated with massive hemoptysis. The patient was a 41-year-old male farmer, who had experienced prolonged fever and off-and-on blood streaked sputum for 2 years. He was admitted to our hospital because of 3 days of massive hemoptysis. He had no underlying medical illnesses, but was a heavy smoker and an alcoholic. The chest radiograph revealed patchy alveolar infiltration of the right upper lobe, mimicing tuberculosis. Massive hemoptysis was not controlled using conservative treatment and anti-tuberculous drugs. Emergency right upper lobe lobectomy was needed to stop the bleeding. Histopathologic examination demonstrated aggregates of filamentous gram-positive organisms in characteristic "sulfur granules", indicating actinomycosis. The fever subsided after intravenous augmentin was given, followed by 6 months of oral amoxicillin. The patient is doing well and has had no recurrent hemoptysis.

INTRODUCTION

Actinomycosis is caused by microorganisms of the *Actinomyces* species, found in the oral cavity (Smego and Foglia, 1998). Pulmonary involvement, other than cervicofacial or abdominopelvic, is uncommon and often leads to a misdiagnosis of pulmonary tuberculosis or lung cancer (Geers *et al*, 1999; Mabeza and Macfarlane, 2003). However, treatment with antibiotics is highly effective. The disease is preventable by having good oral hygiene (Tanaka-Bandoh *et al*, 1997; Smego and Foglia, 1998). Massive hemoptysis due to pulmonary actinomycosis has rarely been reported (Hamer *et al*, 1992; Lu *et al*, 2003). An awareness of the possibility, and early recognition, of this infection can result in decreased complications, such as empyema thorasis, cutaneous chest wall sinus formotion, mediastinitis, pericarditis, and massive hemoptysis (Bassiri *et al*, 1996; Endo *et al*, 2002). Here, we reported a case of pulmonary actinomycosis that required surgical intervention to control massive hemoptysis and adequate antibiotics to cure the disease.

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CASE REPORT

A 41-year-old man, a farmer from Khon Kaen Province, Thailand, presented with a 3-day history of massive hemoptysis. He had a low grade fever and blood-streak sputum off-and-on for 2 years. His clinical condition partially improved with antibiotics, treated as acute bronchitis. His expectorated sputum was collected multiple times and was negative on acid-fast bacilli staining. Cough and fever had been more frequent in the last 3 months. The cough was productive of fresh blood and there was low-grade fever in the evening. His appetite and body weight were normal. Roxithromycin and a cough suppressant were given, but the symptoms persisted and worsened.

Three days before admission, he had massive hemoptysis (>200 ml each time) and a high-grade fever. Supportive treatment was given at the provincial hospital. He was referred to Sinagarind Hospital because of uncontrolled

massive hemoptysis. He had no underlying disease, but was a heavy smoker (20-pack-year) and an alcoholic (for 20 years). He had no history of tuberculosis contacts.

On admission, the patient was a muscular man with an appropriate level of consciousness. His vital signs were: temperature 38.5ºC, blood pressure 106/50, pulse 90/minute and respirations 24/minute. He was slightly pale and had anicteric sclera. His oral hygiene was poor. The cervical lymph nodes were not palpable and the trachea was in the midline. Auscultation of the chest revealed bronchial breath sounds and increased vocal resonance on the right upper lung. The abdomen had no hepatosplenomegaly. Clubbing of fingers was detected. There was no sign of chronic liver stigmata.

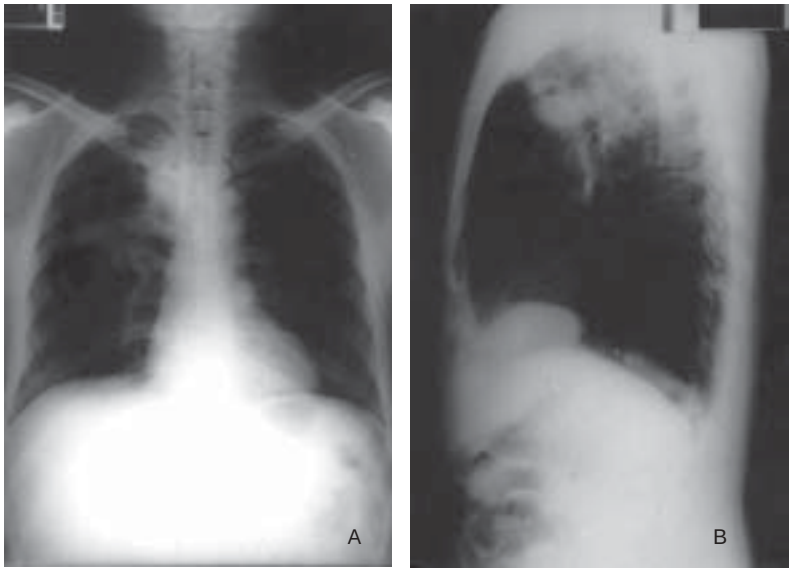

Fig 1–Chest X ray on admission showed patchy alveolar infiltration of the right upper lobe.

The initial hemoglobin concentration was 11.1 g/dl (hematocrit 33%), and the white blood cell count was 13.1 x 10^5/l, comprised of 73% neutrophils, 18% lymphocytes, and 6% monocytes. The platelet count was 268,000 cells/mm^3. The laboratory chemistry profile was normal; BUN 12.8 mg/dl, creatinine 1.1 mg/dl, cholesterol 134 mg/dl, albumin 4.1 g/dl, globulin 3.9 g/dl, total bilirubin 0.9 mg/dl, direct bilirubin 0 mg/dl, ALT 15 U/l, AST 21 U/l, and alkaline phosphatase 78 U/l. The coagulogram was normal; PT 13.8 seconds, PTT 24.4 seconds, and INR 1.16. A chest X ray revealed patchy alveolar infiltration of the right upper lobe (Fig 1).

Conservative treatment at the medical ward was given; including NPO, oxygen via nasal canula at 3 l/minute, a blood transfusion of 2 units in 24 hours, a mild cough suppressant, and anti-TB drugs (HRZE). A chest physician, radiologist, anesthesiologist, and cardiovascular thoracic surgeon were consulted. The massive hemoptysis persisted, amounting to 600 ml over 12 hours, and the hematocrit fell from 33% to 29%.

The operation was performed after 24 hours of conservative treatment, under general anesthesia with a double lumen endobronchial tube. The operative finding was a tense soft tissue mass in the right upper lobe, fibrous adherence to the apical area of the chest wall with many collateral vessels. A right upper lobe lobectomy was done to control bleeding. The estimated blood loss was 1.5 liters, so two units of packed red cells were transfused.

On post-operative day 1, a high grade fever (39º-40ºC) persisted, but there was no bleeding from the double lumen endobronchial tube. Extubation proceeded on the next morning. Gram's and AFB staining from the suctioned secretions and the ICD contents were a few polymorphonuclear cells, numerous red blood cells, but no organisms. Intravenous augmentin was started, and anti-TB drugs were continued because of the fever.

By post-operative day 3, the content of the ICD drainage had decreased to between 5-10 ml and the culture revealed no growth. The ICD tube was therefore removed. However, the high fever persisted, but there was no hemoptysis and he was relatively doing better. The sputum culture indicated normal flora and the two hemo-

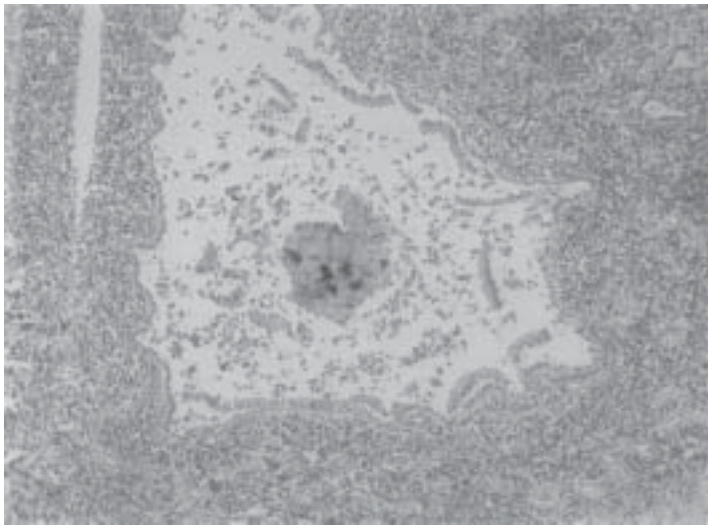

Fig 2 Histopathology of the lung tissue showed a packet of actinomycosis causing multiple lung abscesses, bronchopneumonia, and interstitial fibrosis.

culture specimens produced no growth.

The pathological diagnosis of the right upper lobe was actinomycosis with multiple lung abscesses and interstitial fibrosis (Fig 2). As a consequence, the anti TB drug was discontinued and oral amoxycillin (2 g/d) started. The fever subsequently decreased, and was completely gone after the fourth day of amoxycillin antibiotic. Thereafter the patient was discharged. After six months of the oral antibiotic, the patient showed no recurrence of the hemoptysis.

DISCUSSION

This report describes a patient with subacute pulmonary infection of actinomycosis. In addition to the difficulties of diagnosing actinomycosis, this case was further complicated by the urgency of life-threatening hemoptysis. In general, massive hemoptysis commonly occurs from bronchiectasis, tuberculosis, bronchogenic carcinoma, lung abscess, and aspergilloma (Garzon and Gourin, 1977; Conlan *et al*, 1983). But it is an extremely rare complication of pulmonary actinomycosis (Hamer *et al*, 1992; Lu *et al*, 2003).

Poor oral hygiene would allow normal flora to flourish. Aspiration is the presumptive mechanism leading to thoracopulmonary infection (Smego and Foglia, 1998; Geers *et al*, 1999). Invasive investigations (*eg* bronchoscopy with transbronchial biopsy) are necessary in order to obtain samples for histological and microbiological identification (Bassiri *et al*, 1996; Dujneungkunakorn *et al*, 1999). In some cases, the diagnosis is obtained by transthoracic needle biopsy or from a surgical specimen (Dujneungkunakorn *et al*, 1999; Tangthangtham *et al*, 2001).

The clue for awareness of subacute infection in this patient was prolonged low-grade fever with recurrent blood-streak sputum. Care is necessary since tuberculosis is the more common differential diagnosis in this setting, especially if chest radiographs show an infiltrate of the upper lobes (Smego and Foglia, 1998; Geers *et al*, 1999). Other causative agents that mimic tuberculosis include melioidosis, histoplasmosis, nocardiosis and actiomycosis should be kept in mind.

Baik *et al* (1999) reported 25 cases of pulmonary actinomycosis in Korea. Hemoptysis was the most common clinical symptom, occurring in 72% of patients. Systemic symptoms, such as fever (32%) and weight loss (16%) were also noted. Chest radiographs showed a mass-like lesion(s) (56%), consolidation (40%) or localized bronchiectatic changes (4%). Thoracotomy was performed in 14 cases. Of these, two were performed in order to control hemoptysis. The indication in the other 12 patients was to exclude malignancy. Hence, the diagnosis of pulmonary actinomycosis is often difficult. In many cases, antituberculous medications have been administered without improvement, and surgical resections performed under the impression of lung cancer, have frequently occured.

Massive hemoptysis is an urgent medical condition, demanding intensive care (Ong and Eng, 2003). The mortality rate for patients with massive hemoptysis is as high as 30% to 50%, because of the risk of asphyxiation (Conlan *et*

al, 1983; Corey and Hla, 1987). Conservative treatment in the first 24-48 hours is the mainstay of management. In some series, the bleeding stopped in up to 80% of patients after conservative treatment (Corey and Hla, 1987; Jean-Baptiste, 2000). Conservative management consists of: airway care, oxygen therapy, intravenous fluid and blood components (if indicated), amount of expectorated blood recorded, and specific therapy (antibiotics or antituberculous drugs).

After stabilizing a patient over 24-48 hours, if bleeding dose not stop, bronchial artery embolization (BAE) should be considered (Knott-Graig *et al*, 1993; Swanson *et al*, 2002). Surgical resection is effective in preventing recurrence of hemoptysis and recommended in patients with massive hemoptysis with localized lung disease and good pulmonary reserves (Endo *et al*, 2003). Most reported cases of pulmonary actinomycosis complicated by massive hemoptysis were treated and diagnosed surgically (Endo *et al*, 2002; Lu *et al*, 2003). Only one report indicated successful control of massive hemoptysis using bronchial artery embolization (Hamer *et al*, 1992).

In conclusion, pulmonary actinomycosis is rare, but should be considered in the differential diagnosis of a subacute pulmonary infection followed by massive hemoptysis. Surgical intervention may be necessary to prevent recurrent hemoptysis in patients with good pulmonary reserves and unilateral lung lesions. Prolonged treatment with antibiotics (penicillin or amoxicillin) is indicated to ensure that the disease is cured.

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