Association of pulmonary actinomycosis and tuberculosis: a very rare finding

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Abstract
Pulmonary actinomycosis is a rare respiratory bacteriological infection. The co-infection with tuberculosis is exceptional and should be suspected during radiological control of lung tuberculosis especially in patients with risk factors. We report a case of a 28-year-old man who was treated for pulmonary tuberculosis and in follow-up an abnormal opacity appeared localised in the right upper lobe. Two months after the end of anti-tuberculosis chemotherapy the patient presented haemoptysis. Radiological data revealed two excavating opacities of the right upper lobe. The diagnosis of actinomycosis was obtained in pathological exam after wedge resection of the lesion by thoracotomy. Anti-biotherapy were administered for 6 months. The post-operative course was favourable after two years of follow-up.

Introduction
Pulmonary actinomycosis is an uncommon and indolent pulmonary infection caused by Actinomyces species, which frequently mimics lung malignancy. Pulmonary actinomycosis is commonly confused with other thoracic pathologies [1-3], but co-infection with tuberculosis are very rarely reported [4,5].

We present here a clinical case of rare co-infection, and actinomycosis mimicking other diagnosis in follow-up of tuberculosis.

Clinical report
A 28 years old man, with no medical past, was admitted after one-month recurrent hemoptysis, cough, night fever with sweats, asthenia, anorexia and weight loss of 7 kg. The chest X-ray (Figure 1A), the bronchoscopy and the bacteriological data confirmed a pulmonary tuberculosis. An anti-tuberculous therapy was administrated (rifampicin, isoniazid, pyrazinamide for 2 months and rifampicin, isoniazid, for 4 months). Evolution was completely favourable after two months. Therefore, Chest radiography (Figure 1B) objectified no excavation but an opacity of right lung. The patient was followed for 2 months without clinical symptoms. The radiological image persisted and increased of size (Figure 1C). Few days after the patient presented with hemoptysis. Physical examination was poor and noted bad oral hygiene. The chest radiography objectified two opacities of the right lung with irregular contours. A CT scan (Figure 2A) showed two and excavated hypodense images in dorsal segment of the right upper lobe, thoracic wall involvement, a minimal pleural effusion with hilar and mediastinal lymph nodes (Figure 2B). The sputum samples for acid fast bacilli (AFB) were negative. Bronchoscopy was performed and the bronchoalveolar lavage (BAL) specimens were also negative for AFB. No actinomyces were identified. The culture of these BAL specimens did not grow any specific organism, tuberculosis or fungus. In addition, there were no malignant cells.

Right exploratory posterolateral thoracotomy was indicated, the extemporaneous exam excluded malignancy, and a wedge resection with complete excision of the lesion was performed. pathological exam confirmed actinomycosis showing sulfur granules, identification of actinomyces species was not objectified. Intravenous anti-biotherapy was administered (penicillin G for 3 weeks followed by amoxicillin per os for 5 months), and the patient was admitted to dental care. Evolution was good, two years follow up was uneventful (Figure 3).

Discussion
Actinomycosis is a chronic granulomatous disease with slow progressive suppuration caused by a gram positive anaerobic bacteria from the Actinomycetaceae family. It is a rare disease, There is pulmonary involvement in approximately 15% of all actinomycosis cases, and it usually develops due to aspiration of organisms from the oropharynx. A higher incidence of pulmonary actinomycosis has been reported in patients with underlying respiratory disorders such as emphysema, chronic bronchitis, bronchiectasis and any infection leading to lung parenchyma destruction. Alcoholism, poor oral hygiene,

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Figure 1. Chest x-ray showing, 1A) excavation opacity in the right upper lobe, 1B) opacity of the right upper lobe 2 months in follow-up of tuberculosis, 1C) increase of size of initial opacity (4 months later).

Figure 2. Computed Tomography showing 2A) parenchymal window showing hypodense round image in dorsal segment of the right upper lobe with a gas crescent, and peripheral image with very irregular limits, and central excavation, 2B) mediastinal window showing mediastinal and hilar lymphadenopathy with pleural effusion and thoracic involvement.

Figure 3. Post-operative chest radiograph 6 months after surgery.

PET-CT compared to consolidations without a central low-attenuation area. In the central necrotic portion, low bacterial load and less severe inflammation may result in low maximal SUV on PET-CT. Thoracic wall involvement with bone destruction, osteomyelitis, pleural effusions and cutaneous fistula mediastinal lymph nodes can be noted in advanced stages [2,3].

The confirmation of diagnosis of pulmonary actinomycosis is pathological and can be made by ultrasound or CT guided lung biopsy or surgical biopsy if indicated for complications such as hemoptysis, an empyema thoracic, and destroyed lung parenchyma. Sulphur granulations containing filamentous organisms are pathologically characteristic of actinomyces species [1,2,10].

The anti-biotherapy can ensure a definitive cure [11-13]. Intravenous Penicillin administration is recommended (10 to 20 million units per day) for 2 to 6 weeks followed by oral therapy (ampicillin, amoxicillin, clindamycin, tetracycline, levofloxacin) for 6 to 12 months [1], actinomyces resist to anti-mycobacterial agent explaining the therapeutic failure in cases of tuberculosis, like in our case [4].

Prognosis is generally excellent, surgical treatment followed by penicillin therapy permit definitive cure with low morbidity and mortality[2]. Long-term postoperative antibiotics have been recommended even after complete resection for pulmonary actinomycosis [14]. However, some studies showed that pulmonary actinomycosis did not recur despite a short-term course of antibiotic treatment or no antibiotic treatment following complete resection of pulmonary actinomycosis [15,16].

Conclusion

Co-infection of mycobacterium tuberculosis and actinomyces is rare. It is a diagnostic challenge. Early identification can avoid surgical intervention for advanced stages. Surgical treatment is the best approach in the presence of complications such haemoptysis or parenchyma destruction. Post-operative anti-biotherapy is mandatory.

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