大量喀血後に左肺虚脱を起こし，排菌の止まった多剤耐性結核の1例

阿部　良行　栗田　聡　大久保泰之　橋詰　寿律
藤野　忠彦

要旨：症例は82歳の女性で，痰の塗抹検査でGaffky 3号で培養陽性。薬剤感受性試験でINH，RFP，PASに完全耐性，EB，SMに不完全耐性，KM，TH，CSには感性であった。INH，TH，SM，CSにて加療するも，排菌は持続していた。入院後約半年後に，大量の喀血をきたし，止血剤投与と気管支動脈塞栓術を行った。その後の胸部CT写真にて左主気管支内腔に凝血塊を認め，左肺は虚脱していた。その直後より排菌は停止し，培養でも陰性であった。本例は喀血後の左肺の虚脱が誘因となって，適切な抗結核薬の投与により排菌停止したと考えられた。

キーワーズ：結核菌，多剤耐性，喀血，肺虚脱，気管支動脈塞栓術

Introduction

Almost one-third of the world's population, 1.9 billion people, are infected with the causative organism *Mycobacterium tuberculosis* (*M. tuberculosis*)[1], and multidrug-resistant (MDR) tuberculosis was defined as that caused by the *M. tuberculosis* strains resistant both to isoniazid (INH) and rifampicin (RFP). Massive hemoptysis is defined as the expected production of more than 300 m*l* of blood in 24 hours[2]. Bronchial artery embolization (BAE) has been reported to be useful for the management of massive or recurrent hemoptysis due to pulmonary tuberculosis[3) 4)]. In the 19th century when no effective drugs had been developed to treat tuberculosis, many tuberculosis cases were treated and cured by collapse therapy such as artificial pneumothorax. We reported here a rare case of MDR tuberculosis cured by atelectasis of the left lung due to coagula after massive hemoptysis and by the administration of adequate antituberculous agents.

Case report

The patient was an 82-year-old female with a history of diabetes mellitus, partial resection of the left lung for pulmonary tuberculosis, and hypertension, which were all under good control. On November 15th 1999, she was transferred to our hospital after an examination of her sputum culture showed the colony of MDR strains of *M. tuberculosis*. *In vitro* drug sensitivity test confirmed that this strain of *M. tuberculosis* was defined as MDR, resistant to INH, RFP in addition to ethambutol (EB), although it was sensitive to ethionamide (TH) and cycloserine (CS) (Table).

Physical examination on admission revealed the following: height; 142 cm, body weight; 35 kg, pulse; 84 and regular, blood pressure; 138/80 mmHg, respiratory rate; 24, and temperature; 36.2℃. An examination of the lungs revealed dullness to percussion and decreased breath sounds in the left upper field. Initial laboratory results included a WBC of 6,480

Table Result of drug sensitivity test

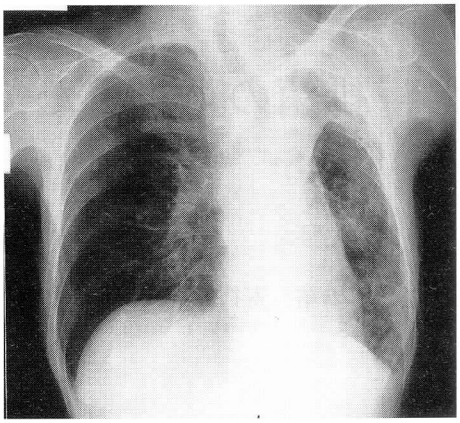
Drug	Concentration (γ)	Sensitivity
Isoniazid	0.1	CR
Rifampicin	50	CR
Para-aminosalicylate	1	CR
Ethambutol	5	IR
Streptomycin	20	IR
Kanamycin	100	S
Ethionamide	25	S
Cycloserine	40	S

CR; complete resistant, IR; incomplete resistant, S; sensitive

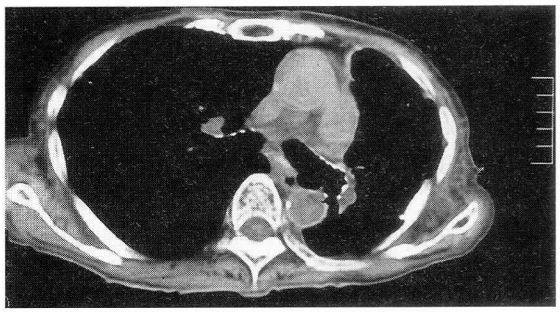
国立療養所神奈川病院呼吸器科

連絡先：阿部良行，国立療養所神奈川病院呼吸器科，〒259-8585 神奈川県秦野市落合666-1（E-mail: abey@kanagawa.hosp.go.jp）

（Received 26 Nov. 2001/Accepted 23 Jan. 2002）

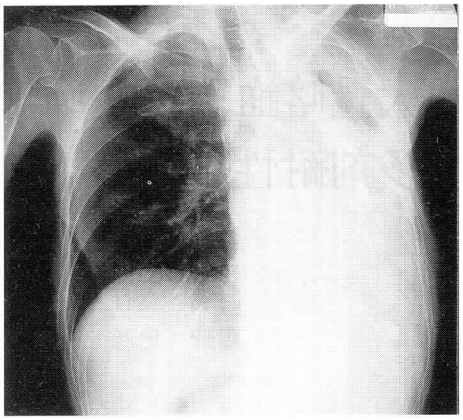


(A)

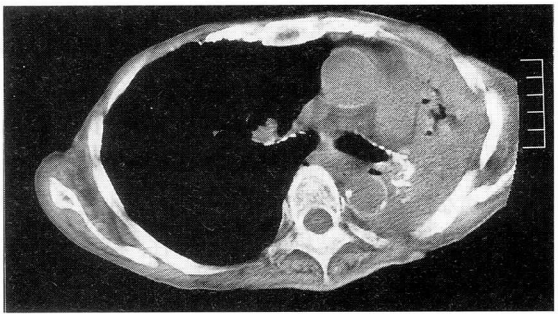


(B)

Fig. 1 On admission, chest radiography (A) revealed massive infiltrates with a large cavity in the left lung field, and chest computed tomography (CT) (B) revealed a calcified left main bronchus without stenosis.



(A)



(B)

Fig. 3 On the 10th day after BAE, chest radiography (A) showed atelectasis of the left lung, and chest CT (B) showed coagula in the left main bronchus with collapse of the left lung.

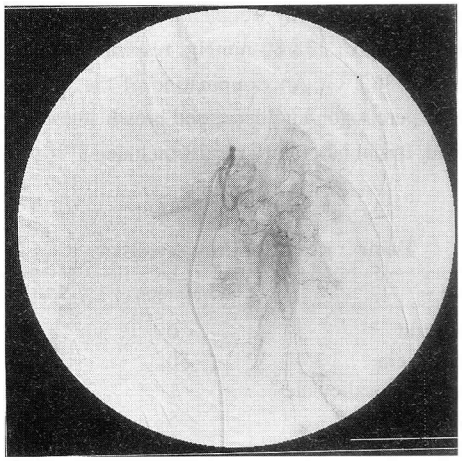
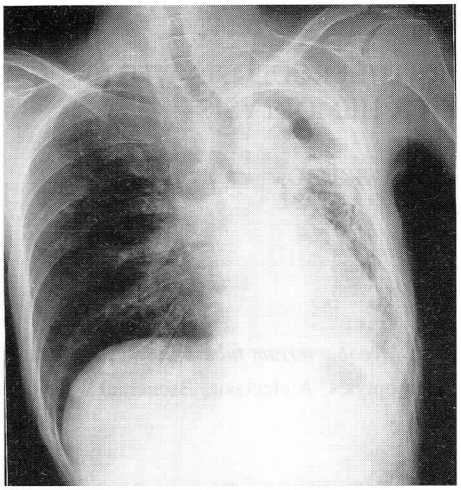
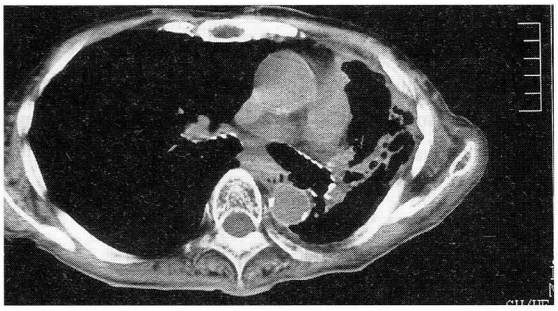


Fig. 2 Bronchial arteriography revealed a left bronchial artery which showed enlargement and hypervascularity.

mm^3, a hemoglobin of 11.1 g/d*l*, and a hematocrit of 34.4%. Prothrombin time, and platelet count were normal, while partial thromboplastin time was elongated. Initial electrolytes and biochemical examinations revealed no abnormalities. A chest radiograph revealed massive infiltrates with cavity and infiltrate in the left lung field (Fig. 1A). Chest computed tomography (CT) also showed infiltrates with large cavity in the upper fields and some cavitary lesions in the lower fields of left lung, but no tracheal or bronchial stenosis (Fig. 1B). The administration of antituberculous agents was started (INH, 0.3 g/day: TH, 0.3 g/day: CS, 0.5 g/day: SM, 0.5 g×2/week), but no improvement in her clinical condition was noted. More than one hundred colonies of *M. tuberculosis* were found at a sputum examination at this time. At 6 months after admission (May 9th, 2000), the patient exhibited sudden onset of massive hemoptysis, and she underwent bronchial angiography (Fig. 2). Bronchial artery embolization (BAE) was performed using a gelatin sponge, and neither hemoptysis nor hemosputa were noted after BAE. After hemoptysis, her chest X-ray showed collapse of the left lung (Fig. 3A), and chest CT showed a shadow, suspected as coagula, in the left main bronchus with atelectasis of the left lung (Fig. 3B). Sputum smear examination revealed no tuberculosis on May 26th and subsequently her sputum culture has shown no colonies of *M. tuberculosis*. On October 2nd, she was discharged from the tuberculosis unit of our hospital. Just before discharge, chest X-ray (Fig. 4A) and CT (Fig. 4B)



(A)



(B)

Fig. 4 Just before discharge, chest radiograph (A) showed an improvement in the infiltration in the left lung, and chest CT (B) showed no coagula in the left main bronchus with improvement of collapse of the left lung and slight infiltration in the left lung field.

showed an improvement in the collapse in the left lung and infiltrates without cavities in the left lower lobe. Broncoscopy was not performed because the patient did not consent.

Discussion

Multidrug-resistant (MDR) tuberculosis is very difficult to treat. It has been reported that overall primary resistance rates were 0−16.9% for INH and 0−3% for RFP resistance, and that acquired resistance rates were significantly higher[5]. In this MDR tuberculosis case, the patient's clinical state improved with reversible atelectasis of the left lung after massive hemoptysis. Atelectasis of the lung can be induced by bronchial tumor, pneumothorax and pulmonary fibrosis[6], and in this case we speculated that the atelectasis of the left lung was due to massive coagula in the left main bronchus resulting in the eradication of the MDR *M. tuberculosis* after hemoptysis. The collapse of the left lung was reversibly improved before discharge and bronchial stenosis due to bronchial tuberculosis was ruled out, since chest X-ray and CT scan showed no bronchial stenosis. Collapse therapy such as artificial pneumothorax should be reevaluated in MDR tuberculosis, because the surgical operation can contribute to the improvement of mortality in limited cases of MDR tuberculosis[7]. To our knowledge, no cases of MDR tuberculosis have been reported like our case cured by collapse. This was a very rare case of MDR tuberculosis cured by collapse of the left lung due to coagula after massive hemoptysis.

Acknowledgments

We are grateful to a radiologist, Dr. Takuro Saito and a pathologist Dr. Masato Nakamura for skillful analysis.

References

1) Sudre P, Ten Dam G, Kochi A: Tuberculosis: A global overview of the situation today. Bull World Health Organ. 1992 ; 70 : 149−159.
2) Hayakawa K, Tanaka F, Torizuka T, et al.: Bronchial artery embolization for hemoptysis: Immediate and long-term results. Cardiovasc Intervent Radiolo. 1992 ; 15 : 154−158.
3) Ramakantan R, Bandekar VG, Gandhi MS, et al.: Massive hemoptysis due to pulmonary tuberculosis: Control with bronchial artery embolization. Radiology. 1996 ; 200 : 691−694.
4) Knott-Craig CJ, Oostuizen JG, Rossouw G, et al.: Management and prognosis of massive hemoptysis. J Thorac Cardiovasc Surg. 1993 ; 105 : 394−397.
5) Cohn DL, Bustreo F, Ravinglione MC.: Drug-resistant tuberculosis review of the worldwide situation and the WHO/IUATLD Global Surveillance Project. Clin Infect Dis. 1997 ; 24 (Suppl. 1) : S 121−S 130.
6) Woodring JH, Reed JC: Types and mechanisms of pulmonary atelectasis. J Thorac Imaging. 1996 ; 11 : 92−108.
7) Freixinet J: Sugical indication for treatment of pulmonary tuberculosis. World J Surg. 1997 ; 21 : 475−479.

Case Report

A CASE OF MULTIDRUG-RESISTANT (MDR) TUBERCULOSIS WITH COLLAPSE OF THE LEFT LUNG AFTER HEMOPTYSIS

Yoshiyuki ABE, Satoshi KURITA, Yasuyuki OHKUBO,
Toshinori HASHIZUME, and Tadahiko FUJINO

Abstract An 82-year-old female was admitted to our hospital with multidrug-resistant (MDR) tuberculosis, defined as resistance to both isoniazid and rifampicin. Chest X-ray showed massive infiltrates with a large cavitary lesions in the left lung field. No antituberculous agents were useful in improving her clinical condition and at 6th months after admission, she exhibited sudden onset of massive hemoptysis, which was successfully treated by bronchial artery embolization. After hemoptysis, her chest X-ray showed collapse of the left lung and computed tomography showed a coagula-like shadow in the left main bronchus, and sputum examination revealed no *Mycobacterium tuberculosis* colonies. The patient was discharged 5 months after the onset of hemoptysis.

Key words: *Mycobacterium tuberculosis*, Multidrug-resistant (MDR), Hemoptysis, Atelectasis, Bronchial artery embolization

Department of Respiratory Disease, National Sanatorium Kanagawa Hospital

Correspondence to : Yoshiyuki Abe, Department of Respiratory Disease, National Sanatorium Kanagawa Hospital, 666−1, Ochiai, Hadano-shi, Kanagawa 259−8585 Japan. (E-mail: abey@kanagawa.hosp.go.jp)