



Original article

Surgical management of hemoptysis in pulmonary tuberculous patients

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Abstract

Objectives: Pulmonary Tuberculosis (TB) is a disease that is often treated medically. However, medical treatment usually fails in the management of tuberculosis – related hemoptysis. In this study, we aimed to assess the role of surgery in the treatment of hemoptysis due to pulmonary TB.

Methods: Fifty two patients presented by hemoptysis and underwent pulmonary resection were enrolled in this study. Patients were divided into two groups according to the timing of surgical procedures: **Group A** (n = 22) included patients who underwent surgery within two days of presentation which was major to massive hemoptysis causing hemodynamic instability. **Group B** (n = 30) included patients who underwent surgery within 4 days after presentation with hemoptysis which was persistent and minor.

Results: There was no significant difference in the demographic data between both groups. Major and massive hemoptysis were the common presentation of group A, whereas minor hemoptysis was the main presentation in group B. Tuberculous cavities were the most common lung lesions in both groups (40.9% in group A, versus 40% in group B). Lobectomy was the main surgical procedure performed in both groups (50% in group A, versus 56.7% in group B). Regarding the complications, Bronchopleural fistula occurred in one case in each group after pneumonectomy. Recurrent hemoptysis occurred in only one case in group A. There was one case (4.5%) of mortality in group A.

Conclusion: Early pulmonary resection in patients with hemoptysis is an effective and safe method to insure good outcome. Limited resections are associated with higher incidence of recurrence.

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Keywords: Lung; Major hemoptysis; Surgical resection; Tuberculosis

1. Introduction

Hemoptysis is one of the commonest and challenging clinical symptoms encountered in the practice of routine and emergency respiratory medicine. Massive hemoptysis is a significant event that frightens the patients and often

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frustrates the treating physicians. Currently, there are many divergent views surround the management of major/massive hemoptysis. This may partly be due to the wide variety of causes that lead to this event [1].

In the era of modern thoracic surgery, An interdisciplinary team work is mandatory to identify TB patients who can benefit from surgery [2].

Hemoptysis is not an unusual finding in patients with old or active pulmonary tuberculosis. Because of bronchial artery or a branch of pulmonary artery erosion due to cavitary infiltration, bronchiectasis, fungus ball, broncholithiasis or destroyed lung, the bleeding can sometimes be a life-threatening situation. Assessment of the patient and finding the exact site of bleeding can be difficult especially in a patient with disseminated lung disease [3].

The aim of this study was to evaluate the outcome of surgery in patients with hemoptysis due to pulmonary tuberculous lesions.

2. Patients and methods

2.1. Study design

After approval for the study protocol by the Menoufia Ethics Committee and an informed signed consent from all patients included in the study, we conducted a prospective observational study in the Cardiothoracic Surgery Department, and Chest Diseases Department in Menoufia University Hospitals from October 2010 to December 2015.

All the patients (n = 52) were previously diagnosed as having pulmonary tuberculosis and under antituberculous chemotherapy at the time of presentation with hemoptysis or had previously received a full course of antituberculous drug therapy and admitted with hemoptysis.

Based on the quantity of blood expectorated per day, hemoptysis was classified into three groups: persistent minor (less 200 ml daily, lasting at least 4 days), major (200–600 ml daily), and massive (more than 600 ml daily) [4,5].

Patients were divided into two groups according to the timing of surgical procedures: Group A (n = 22) included patients who underwent surgery within two days of presentation with hemoptysis due to hemodynamic instability. Hemoptysis was major to massive in patients of this group. Group B (n = 30) included patients who underwent surgery within 4 days after presentation with hemoptysis which was minor.

2.2. Preoperative preparation

All patients underwent the following: medical history and clinical examination, Routine laboratory tests were done at admission and preoperatively: complete blood count (CBC); liver and kidney function tests; fasting and two hours post-prandial blood sugar and coagulation profile. Patients with hemoglobin <9 gm/dl received packed red blood cells (RBCs) before surgery. chest X-ray, PA and lateral views, computed tomography (CT)-chest scan with contrast, sputum analysis for acid fast bacilli for at least three successive days, and fiberoptic or rigid bronchoscopy as a preoperative procedure to localize the bleeding area and bronchoalveolar lavage (BAL) for acid fast bacilli and cytological analyses. Triple anti-tuberculous chemotherapy (Anti-TB chemotherapy) with isoniazid (5 mg/kg daily), rifampin (10 mg/kg daily), and ethambutol (25 mg/kg daily) was maintained in all patients currently taking medication.

Preoperative echocardiography and electrocardiography (ECG) were performed in all cases. Preoperative pulmonary function tests were performed in 15 cases, from group B after stabilization of the condition. Pulmonary resection was done via posterolateral thoracotomy and endotracheal intubation by a double-lumen endotracheal tube in all patients. Pneumonectomy was made in the case of a destroyed lung, lobectomy or bilobectomy in the case of a cavitary lesion occupying one or two lobes, and segmentectomy or wedge resection in the case of a cavitary lesion occupying one or more segments.

2.3. Postoperative Anti-TB chemotherapy

Patients were recommenced for their preoperative anti-TB chemotherapy regimen as soon as they resumed oral intake after surgery with the possible adjustment of chemotherapy after analysis of the bacteriological results of the surgical material (resected lung tissue). Postoperative chemotherapy is as indispensable as preoperative chemotherapy because after resection of the main lung lesion, scattered nodular lesions and tiny cavities may be left behind. It is, therefore, vital to ensure that all patients [in particular those with Multi-drug/Extensive drug resistance (M/XDR-TB)] remain on multidrug anti-TB regimens for a sufficiently long period to kill the bacilli present at the remaining lesions. The following durations of anti-TB chemotherapy were followed, depending on whether patients are culture-positive or culture-negative at the time of surgery:

- (I) For culture-positive patients at the time of surgery: a-With susceptible TB, four to six months after culture conversion. b-With MDR-TB (resistance to both Isoniazid and the Rifampicin), at least 18 months after culture conversion, and, c-with XDR-TB

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