Localized Pulmonary Hemorrhage Associated With Massive Hemoptysis: Report of a Case

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Massive hemoptysis is a rare but emergent condition which requires prompt attention. In this case study, a 48-year-old man presented with massive hemoptysis. Chest computerized tomography obtained after admission demonstrated focal density in the right-middle lobe and presence of nodulointerstitial infiltrate in both lungs. Active bleeding limited fibrobronchoscopy. Therapeutic bronchial artery embolization was attempted prior to surgery. An uneventful resection of the right-middle lobe was performed and the pathological diagnosis was localized pulmonary hemorrhage. **(Mid Taiwan J Med 2002;7:113-7)**

Key words

hemoptysis, pulmonary hemorrhage

INTRODUCTION

Localized pulmonary hemorrhage is a diagnostic term referring to hemorrhage localized in one portion of lung, usually a lobe, and is markedly different from diffuse alveolar hemorrhage. Diffuse alveolar hemorrhage is always associated with pulmonary capillaritis initiated by an immune mechanism [1]. The etiology of localized pulmonary hemorrhage is quite variable, and includes localized tumor, ulceration, and cavitary lesion. In many cases, there is no gross abnormality (other than blood), which poses a difficult and often frustrating problem for the pathologist. In some authors' experience, the source of bleeding in such cases is almost always the bronchi, and serial sections should be taken from the bronchial tree to secure the underlying etiology. In a significant number of cases, however, the source of bleeding was not identified [2].

Received : September 26, 2001. Revised : November 23, 2001. Accepted : November 26, 2001.

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CASE REPORT

A previously healthy 48-year-old man presented with massive hemoptysis and profound fatigue. One month prior to admission, he had his first episode of coughing-up blood. In the subsequent weeks, he had intermittent bloody cough about once a week. There was no fever, dyspnea, arthralgia, weight loss, or bleeding diathesis. He had no systemic disease such as liver cirrhosis, renal insufficiency or hematology disease. He smoked about 25 packs per year. His occupational history included 10 years' employment at a plastic factory. There was no history of tuberculosis. On admission, he presented with cough with blood amounting

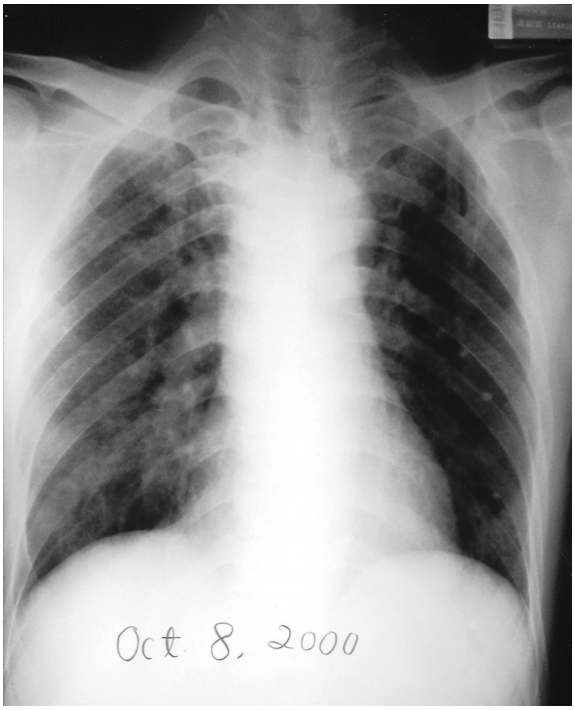

Fig. 1. CXR of PA view showed non-specific findings with focal infiltrate over Rt heart border compatible with RML lesion.

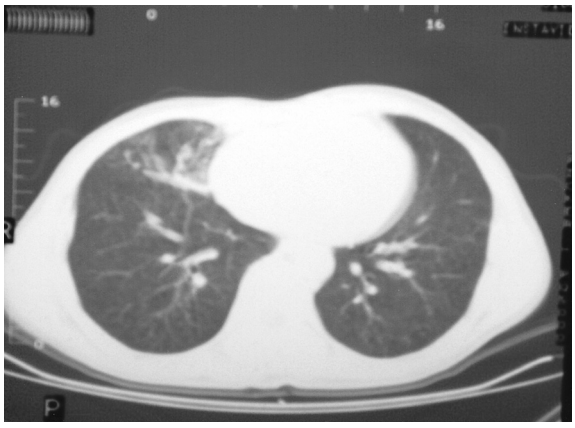

Fig. 2. Chest CT demonstrated focal density adjacent to right heart border, indicating RML lesion.

to 250 mL.

On examination, he was acutely ill and weak. His vital signs were: BP 130/70 mmHg, PR 100/min, RR 18/min, BT 36.8 ℃. There was no respiratory distress or labored breathing. Some inspiratory coarse crackles were audible from the right-lower anterior chest wall. He had neither clubbing digit nor palpable telangiectasis. Cervical and supraclavicular lymph nodes were palpated but normal. The chest roentgenogram (Figs. 1,2) remained unchanged during the one month follow-up. His hemoglobin was 110 g/L and his white blood cell count was 7,200/mm^3. Results of his coagulating profile and biochemical laboratory survey, including antinuclear antibody, were normal.

Bronchoscopy was performed but limited by profound hemoptysis during the procedure. Emergent bronchial artery embolization was attempted but not performed due to multiple supply of the lesion and common supply of the intercostal and spinal artery. He received surgical intervention with RML resection.

The surgical specimen (Fig. 3) revealed parenchymal hemorrhage with firm palpation. There were some blood clots within the small bronchus, but no change of bronchiectasis, bronchial mural thickening, or other mucosal abnormalities. The pulmonary arterial and venous systems were unremarkable.

Microscopically, the alveolar parenchyma showed marked hemorrhage with organized hematoma. Sections from the gross hemorrhage area showed intrabronchiolar and intra-alveolar hemorrhage with a secondary compensatory emphysematous appearance in the adjacent lung tissue. There was evidence of a focal ulcerative area in the bronchial wall and peribronchial hemorrhage (Fig. 4). A microlith was also noted within the bronchiole. Chronic inflammatory cells infiltrated the peribronchiolar region, and some hemosiderrin-laden macrophages (Fig. 5) were present. No evidence of dysplasia or mitotic cells were noted in the ulcerative epithelium, and no granulation tissue was demonstrated.

DISCUSSION

The definition of massive hemoptysis varies widely in the literature, from 200 to 1000 mL/24 hrs [3,4], but more than 600 mL in 24 hours is what most authors use in clinical reports to define massive hemoptysis [5], which accounts for approximately 1.5% of all hemoptysis [6]. There are many causes of

Fig. 3. Resection of right middle lobe.

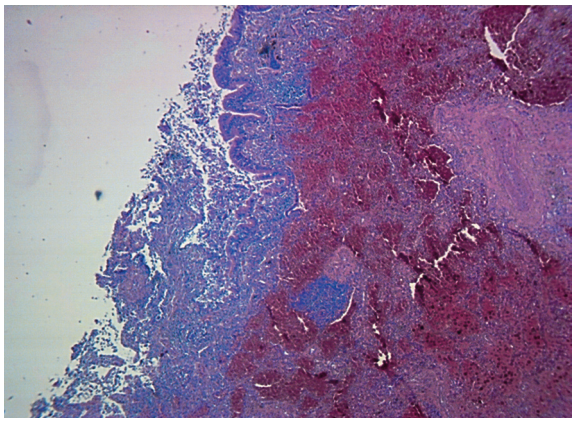

Fig. 4. An ulceration of bronchial wall with peribronchial hemorrhage.

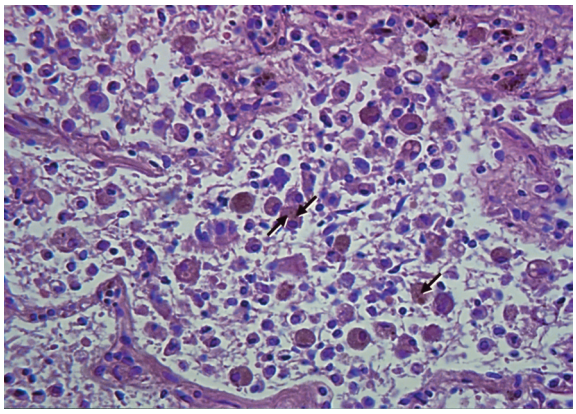

Fig. 5. Hemosiderin laden macrophage within alveoli.

massive hemoptysis. The frequency of some etiologies varies with the demography of the population sample. In generally, tuberculosis, bronchogenic carcinoma and bronchiectasis are the leading causes of massive hemoptysis [7]. Management of hemoptysis depends on rapid diagnosis and airway protection. The combined use of bronchoscopy and chest CT probably provides the best diagnostic yield [8]. The mortality rate of patients with mild to moderate hemoptysis is low (2.5% and 6%, respectively), while patients with massive hemoptysis have high mortality rates (38%) [8].

In this case, there were clues of microscopic findings which were potentially related to this episode of hemoptysis, focal ulceration of the bronchial wall and the intra-bronchiolar microlith. Localized pulmonary hemorrhage, one of the causes of massive hemoptysis, usually means that the bleeding area is confined to one portion of lung, usually a lobe. Chest radiographs may show localized consolidation corresponding to the area of intra-alveolar hemorrhage, and bronchoscopes can identify fresh blood emanating from bronchi supplying the affected lobe. Some patients with localized bleeding have an obvious mass lesion or cavity that accounts for the hemorrhage, but in many cases there is no gross abnormality. These situations pose difficult and often frustrating problems for the pathologist. In some cases, microscopic foci of granulated tissue, with or without ulceration, broncholithiasis, foci of in situ squamous cell carcinoma, and tiny carcinoid tumors, are examples of abnormalities that may be found in the bronchi which account for the bleeding.

Bronchial artery embolization (BAE) is a widely used procedure for management of massive and recurrent hemoptysis. Severe complications of BAE are limited to spinal cord injury [9], which is one of the reasons why we hesitated to perform BAE in this case. The proper application of bronchial arteriography and embolization techniques depends on a thorough knowledge of the arterial anatomy, a meticulous catheterization technique, the use of nonionic or low osmolarity contrast materials, and adequate positioning of the catheter. In these optimal

conditions of safety, BAE is the treatment of choice for severe and recurrent hemoptysis.

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局部肺出血併大量咳血：一病例報告

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大量咳血是一種少見但卻緊急而且需要立即加以處理的狀況。我們報告的是一位48歲男性病患，主述大量咳血的案例。住院後電腦斷層顯示在右中肺葉有局部浸潤現象。支氣管鏡檢因爲大量咳血被迫中止，轉而安排血管攝影嘗試作支氣管動脈栓塞，仍告無效。最後尋求外科處置，順利移除右中肺葉，病理診斷爲局部肺出血案例。（中台灣醫誌 **2002;7:113-7**）

關鍵詞

咳血，肺出血

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收文日期：9/26/2001　　修改日期：11/23/2001

接受日期：11/26/2001