

A rare case of massive hemoptysis: Long-term complication of thoracotomy; rib fracture

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Abstract

Massive hemoptysis is one of the fatal condition in the symptoms of chest diseases. Airway protection and etiology therapy is life-saving. A 29-year-old male patient was referred to our center for massive hemoptysis. He had 10 packet-years of smoking and lung cyst operation 20 years ago. Bleeding could not be stopped by bronchoscopic intervention in the outer center. Pulmonary imaging showed consolidation and laceration with right rib fracture and bone density within the parenchyma. Bronchial artery embolization was performed. He was operated due to lack of bleeding control. Recurrent operations were performed until pneumonectomy due to expansion defect. The patient has been followed up for 2 years and is asymptomatic. Hemoptysis was considered due to the operation complication performed 20 years ago. We aimed to present a patient who presented with massive hemoptysis due to a previously unreported cause.

Keywords: Massive hemoptysis; thoracotomy; rib fracture

INTRODUCTION

Massive hemoptysis is a life-threatening condition that requires urgent intervention (1). The bronchial artery is the main source of massive hemoptysis (2). The most common causes include malignancy, bronchiectasis, tuberculosis and pulmonary infections (3, 4). Iatrogenic massive hemoptysis is seen very rare in interventional procedures. The goal of treatment is to maintain airway patency, stop bleeding, provide hemodynamic instability and prevent recurrence. Treatment should include bronchial artery embolization (BAE), therapeutic bronchoscopy, surgery, or a combination of these methods (3). Massive hemoptysis due to rib fracture among the long-term complications of thoracotomy is not found in the literature (5). We aimed to present our case since it developed many years after thoracotomy and has not been reported in the literature before.

CASE REPORT

A 29 year-old male patient admitted to outer center complaining of massive hemoptysis and hospitalized 12 days ago. During the external center follow-up,

approximately 300-400 cc hemoptysis was performed daily and 2 units of erythrocyte suspension were replaced. Flexible bronchoscopy by chest diseases and rigid bronchoscopy 2 times by thoracic surgery were performed and revealed hematoma and cleaned. The patient was referred to our center for bronchial artery embolization due to hemoptysis continued on the 10th day of hospitalization.

His medical history revealed a hydatid cyst operation 20 years ago. He had a 10 packet-years smoking history. He has no additional diseases and no continued drug use. He's doing marketing. He has been feeding pigeons for 15 years.

Vital findings were normal. Chest auscultation revealed inspiratory crackles under the scapula in the right lung. Laboratory findings (hemoglobin was 14 g / dL, hematocrit was 39.9%, Biochemistry, CRP, platelet, APTT, INR) were in the normal range. Chest x-ray showed loss of volume in the right lung, increased density extending from the right paracardial area to the lateral, deformation in the bone structure and decreased intercostal spaces (Figure 1).

Received: 13.05.2020 **Accepted:** 28.09.2020 **Available online:** 23.10.2020

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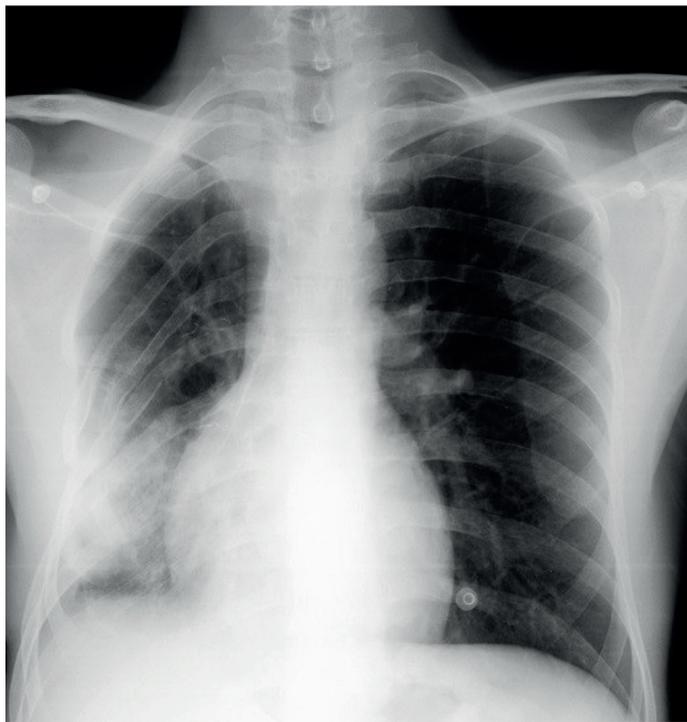


Figure 1. PA chest x-ray view showing deformity in the right, 4, 5, and 6th ribs and consolidation in the right middle zone

Computed tomography of thorax (Thorax CT) reported as "Widespread alveolar filling is observed in ground glass density around the common consolidated lung area in which the bone density is monitored in the middle-lower zone of the right lung (Contusion?). The right 5th rib is defective in the lateral section and extends towards the lung parenchyma". Rib fracture and laceration in the parenchyma were seen in three-dimensional imaging (Figure 2). Because the fracture line had a callus and no history, it was thought that the fracture was not acute.

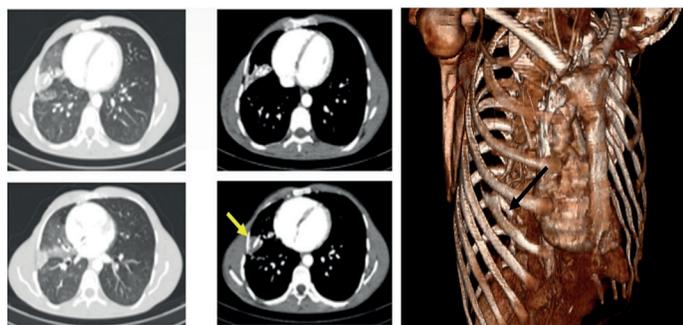


Figure 2. Consolidated lung area in the middle-lower zone of the right lung, in which bone density is monitored and with a ground glass appearance around it (yellow arrow). Fracture in right 4, 5, 6th ribs and laceration with rib part in the parenchyma (black arrow)

Medical treatment was started and BAE was performed. The costabronchial truncus branch leading to the right lower lobe was selectively catheterized with a microcatheter and then embolized with a mixture of lipiodol and N-butyl-2-cyanoacrylate. The patient was operated because the patient had no regression in hemoptysis after

embolization. The middle lobectomy was performed due to the bone fragment that destroyed the middle lobe (Figure 3). Hemoptysis disappeared in the postoperative follow-up but patient underwent retoracotomy due to prolonged air leakage and pneumonectomy was performed. Patient is symptom free for 2 years of follow-up (Figure 4).



Figure 3. Middle lobectomy material extracted with bone fragment.



Figure 4. PA lung image of the patient in the first postoperative year

DISCUSSION

The incidence of pulmonary complications after thoracotomy varies between 5% and 80%. Complications due to thoracotomy depend on the type of thoracic surgery, patient's comorbidity, primary disease, and

smoking status. Atelectasis is the most common post-operative pulmonary complication. Rib fracture, chronic pain, intercostal artery injury and secondary hemothorax, fistula, empyema, loss of sensation on the skin are among the complications that develop due to thoracotomy incision in the acute and chronic period (5). In our patient, massive hemoptysis due to rib fracture was observed after 20 years from thoracotomy. Massive hemoptysis due to rib fracture is not found in the literature as far as it is known among the long-term complications of thoracotomy.

Etiological causes and frequencies may vary depending on factors such as geographic regions, socioeconomic status, severity of hemoptysis, and the period of study. The most common causes of massive hemoptysis are malignancy, bronchiectasis, tuberculosis and pulmonary infections (3). Benign causes were found more frequently in the etiology of massive hemoptysis in our country's data (6, 7). As with all diseases, history is the most important guide in the diagnosis of hemoptysis. Detailed job and disease history should be obtained. In our case, because the fracture line had a callus and no history, it was thought that the fracture was not acute. There was no known etiological factor other than cyst hydatid operation twenty years ago. The absence of symptoms for such a long time can easily escape the attention of the patient and the physician.

In the clinical evaluation of the hemoptysis patient, firstly, the amount of bleeding should be questioned to determine whether there is massive hemoptysis (8). Our case also had massive hemoptysis. Medical and bronchoscopic intervention was performed at the outer center and was referred to our center after the bleeding continued.

Multidetector CT has a high level of success in determining localization of bleeding. Another method used to determine the bleeding focus is bronchoscopy (9, 10). The rigid bronchoscope provides good bleeding control, although it needs anesthesia and is unable to provide visualization of all segments. While flexible bronchoscope offers advantages such as ease of use and no anesthesia, bleeding control can be difficult.

Treatment modalities from endoscopic interventions to anatomical resections may be required to stop bleeding in massive hemoptysis. Cold saline lavage, adrenaline and tranexamic acid application, fibrinogen-antithrombin (Tisseel), oxidized regenerated cellulose (surgicel) use, balloon tamponade, endobronchial stent tamponade, argon and laser applications are used in massive hemoptysis as bronchoscopic treatment method. Selective intubation can be performed to maintain airway patency in ongoing life-threatening massive bleeding. Indications of BAE include inadequate medical and bronchoscopic treatment, stabilizing the patient measure before surgical resection or medical treatment, thus enabling elective surgery, and curative treatment for patients who do not accept surgery or medical inoperable (8). In our case, BAE was performed after bleeding continued despite endoscopic interventions. The fact that the patient lived

with bone fracture for many years resulted in destruction in the lung. The hemoptysis continued despite bronchial artery embolization due to the destroyed lung tissue and the patient could be completed with multiple surgery up to pneumonectomy due to prolonged air leak and expansion defect.

As a result, massive hemoptysis is a life-threatening emergency. Treating etiology evaluating with history and radiology will be life-saving.

Conflict of interest: The authors declare that they have no competing interest.

Financial Disclosure: There are no financial supports.

Patient informed consent : Before commencing the study, the aims and content of the study were explained to all participants, and their written consent was obtained.

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