clinical and roentgenographic features of unknown etiology is categorized as chronic eosinophilic pneumonia.\(^3\) Radiographically, the characteristics of this entity have been well described in adults and include the finding of dense pulmonary infiltrates which progress with time and are arranged in an unusual pattern in that they are found peripherally rather than centrally. Carrington and associates\(^3\) refer to this as a "photographic negative" of the shadow seen in pulmonary edema. In our patient, the progressive nature of this disease was well documented over an eight-month period. At no time was there evidence of clearing on antibiotic therapy prior to the institution of steroid treatment. It was significant to note the dramatic response to corticosteroid therapy and no recurrence of the disease process after cessation of steroid therapy.

REFERENCES


Control of Hemorrhage in Emergency Pulmonary Resection for Massive Hemoptysis*

Anatole Gourin, M.D., F.C.C.P., and Antonio A. Garzon, M.D.

Emergency pulmonary resection for hemoptysis during an episode of massive intrabronchial bleeding requires protection of the contralateral lung from aspiration of blood. We describe a method of selective unilateral ventilation applied to 15 patients, without mortality attributable to this factor.

In pulmonary hemorrhage the rate of bleeding into the tracheobronchial tree poses a greater threat to life than the total amount of blood loss. Patients tend to drown in their own blood and asphyxiate rather than exsanguinate.\(^1\) At our institution we operate on all patients who expectorate a minimum of 600 ml of blood in 24 hours or less and are able to tolerate thoracotomy. This aggressive approach resulted in reduction of mortality from massive hemoptysis from over 75 percent in the patients managed conservatively to 18 percent in the patients treated surgically.\(^2\)\(^3\) In the past ten years 64 patients underwent pulmonary resection for massive hemoptysis. In 22 patients hemoptysis persisted after the initial 600 ml of blood had been expectorated, and emergency pulmonary resection had to be performed during an episode of massive intrabronchial bleeding. Early in our experience we utilized Carlens double-lumen tubes to protect the nonbleeding lung from aspiration of blood. Four of seven patients so managed died as a result of massive aspiration of blood during operation. In more recent years, a technique of endobronchial intubation with use of a balloon catheter blocker proved more effective in protecting the contralateral lung from blood.

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Figure 1. Right-sided bleeding. (A) Cuffed tube in left main bronchus protects left lung from spillage of blood in early phase of operation. (B) Bronchus of bleeding lobe has been cross clamped and cuffed tube is withdrawn into trachea.
spillage in the early phase of pulmonary resection. This method has now been applied in 15 patients, 9 of whom bled from the right lung and 6 from the left lung. There were no deaths attributable to aspiration of blood among these 15 patients.

The tracheobronchial tree is normally asymmetric. The main stem bronchus is significantly longer on the left side, the left upper lobe bronchus originating more distally than the right. This normal anatomic asymmetry necessitates a different approach for each lung.

**Materials and Methods**

**Bleeding Right Lung**

The source of bleeding is always confirmed by bronchoscopy under topical anesthesia. After thorough suctioning, the bronchoscope is removed and immediately replaced by a single-lumen cuffed tube which is advanced into the left main bronchus; the cuff is then inflated (Fig 1A). The patient is anesthetized and positioned for lateral thoracotomy in a Trendelenburg position, allowing blood to run out of the trachea around the tube. As soon as the bronchus of the bleeding lobe is dissected and cross-clamped the tube is deflated momentarily and withdrawn from the left main bronchus into the trachea (Fig 1B). All residual blood is aspirated from the tracheobronchial tree, and the operation is completed with bilateral ventilation.

**Bleeding Left Lung**

After confirmation of the source of bleeding by bronchoscopy a Fogarty occlusion catheter, size 8/14 F, 80 cm long and equipped with a 10 ml balloon is inserted through the bronchoscope into the left main bronchus to block the bleeding into the left lung. Plastic tubing, 30-40 cm long is interposed between the proximal end of the hub and the Luer-lok fitting of the Fogarty catheter to facilitate removal of the bronchoscope without displacement of the catheter from its position in the left main bronchus. The bronchoscope is removed and replaced by a cuffed endotracheal tube (Fig 2A). Correct position of the balloon catheter can be confirmed by a chest roentgenogram taken on the operating table (Fig 3). The patient is anesthetized and positioned for left lateral thoracotomy. As soon as the bronchus of the bleeding lobe is dissected and cross-clamped, the balloon catheter is deflated and removed by the anesthesiologist (Fig 2B). All residual blood is aspirated from the tracheobronchial tree and the operation is completed with bilateral ventilation.

**References**