Topical Hemostatic Tamponade

Another Tool in the Treatment of Massive Hemoptysis

Hemoptysis is not a separate disease; rather it is a manifestation of multiple pathologic processes. Despite the potentially fatal outcome of hemoptysis, the underlying disease is usually otherwise benign and treatable. The risk of death is particularly high when hemoptysis is massive, and some investigators estimate the risk of mortality with untreated massive hemoptysis to be in excess of 75%. Others have found the risk of death to be lower and have advocated an initially conservative approach, although there may be significant mortality from subsequent bouts of hemoptysis in these patients. Some of the variation in mortality risk is due to the lack of the common definition of the term massive. However it is defined, it is clear that massive hemoptysis represents a significant and immediate risk to these patients.

Early studies found that emergent surgical resection dramatically reduced the number of deaths in patients with massive hemoptysis. Not surprisingly, investigators who found a lower mortality rate from hemoptysis have advocated a more conservative approach that reserves surgery for patients who do not respond to other treatment. Surveys at the American College of Chest Physicians Annual Scientific Assembly would suggest that chest clinicians are increasingly using a nonsurgical approach for patients with life-threatening hemoptysis. Additionally, resection is not always an option. Patients with tumors involving the carina, multiple sites of bleeding, poor lung function, or other major illnesses may not be appropriate for lung resection.

In the past few years, bronchial artery embolization has been used with success to control hemoptysis. Embolization has been particularly successful in patients with cystic fibrosis who are prone to recurrent bouts of hemoptysis. Endoscopic argon plasma coagulation has been shown to be effective in the treatment of patients with hemoptysis caused by neoplastic disease.

Valipour et al in this issue of CHEST (see page 2113) describe a novel technique for controlling massive hemoptysis. The authors of this study applied topical hemostatic tamponade therapy by inserting oxidized regenerated cellulose mesh through a flexible bronchoscope to achieve control of bleeding. This treatment is advantageous because it can be done in the bronchoscopy suite, the ICU, or the emergency department. Whether the results were due to the hemostatic effect of oxidized regenerated cellulose mesh, are simply a tamponade effect, or both, the results were very good.

Topical hemostatic tamponade effectively arrested the bleeding in 56 of the 57 patients treated. The one patient without immediate control of hemoptysis by topical hemostatic tamponade underwent successful surgical resection. In 6 of the 56 patients who achieved immediate control of hemoptysis by topical hemostatic tamponade there was recurrent bleeding of a lesser amount in the first few days following this therapy. Bronchial artery embolization was used in all of these six patients, and repeat topical hemostatic tamponade was used in two of the six patients with recurrent hemoptysis in whom hemoptysis had not been controlled by bronchial artery embolization. In a mean follow-up period of 10 months, no patient died from recurrent hemoptysis. There were remarkably few side effects from topical hemostatic tamponade given that the involved airway was intentionally occluded. Five patients subsequently developed postobstructive pneumonia. The material was completely reabsorbed in all patients undergoing repeat bronchoscopy.

Like all new techniques, one awaits results from other hands. This technique is not suitable for patients with a tracheal site of bleeding or for patients who would not tolerate temporary occlusion of the involved airway. Additionally, since the material is absorbed, long-term studies may find a high rate of late reoccurrence similar to that with bronchial artery embolization.

One difficulty in comparing studies is a lack of standardized terminology. Valipour et al used bleeding in excess of 150 mL/h to define massive or life-threatening hemoptysis. Gourin and Garzon defined massive hemoptysis as bleeding of > 600 mL per 24 h and found that surgical resection dramatically improved survival. Sehhat et al also favored a surgical approach in patients with massive hemoptysis, which was defined as bleeding of > 600 mL in 48 h. Corey and Hla defined major hemoptysis as bleeding of > 200 mL per 24 h, and massive hemoptysis as bleeding of > 1,000 mL per 24 h. Not surprisingly Corey and Hla found a much higher mortality in their patients with massive hemoptysis (58%) compared to the mortality in patients with major hemoptysis (9%). The study by Valipour et al...
in this issue of CHEST was not designed to be, nor should it be interpreted as, a comparative study of various techniques for controlling life-threatening hemoptysis.

Intensivists, pulmonary physicians, and thoracic surgeons will continue to face the challenge of massive hemoptysis. Emergent control is essential to save the lives of these patients. Topical hemostatic tamponade does not replace the other forms of therapy, but it does give us another effective tool. The selection of treatment will depend on multiple factors, including underlying pathology, patient response, and institutional expertise.

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REFERENCES


Unique Solitary Small Cell Lung Cancer

Need for Histologic Examination

In this issue of CHEST (see page 2273), Kamigaki and colleagues describe a small cell lung cancer (SCLC) that presented as an intraluminal lesion in the left descending pulmonary artery. The diagnosis was based on histologic descriptions of transbronchial aspirates that were supported by immunohistochemical data (+thyroid transcription factor-I, +cytokeratin, and –leukocyte common antigen). The results of staining with both chromogranin and synaptophysin were negative, and this indeed may be the case in a small number of SCLCs. Supporting the diagnosis were elevated levels of Pro-gastrin-releasing peptide, neuron-specific enolase, and carcinoembryonic antigens. The weight of evidence suggests that the tumor is an SCLC.

The diagnosis of SCLC should rest primarily with the histologic examination.1 SCLC can be confused with basaloid squamous cell cancers2 and other poorly differentiated tumors with some neuroendocrine differentiation. The limited amount of material available for analysis complicated the diagnosis.

The authors correctly point out that no conclusion can be reached regarding the origin of the SCLC. A surgical resection would have offered a better analysis of this cancer, but the patient’s outcome to date suggests that appropriate treatment was applied. The value of this presentation should be the potential for localized SCLC to be aggressively treated. There is a strong likelihood that the SCLC will recur. At that time, all efforts should be made to obtain sufficient tissue for clarification of the pathology.

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REFERENCES

1 Ritter JH. To stain or distain, that is the question. Am J Clin Pathol 2003; 119:630–631