Early “Profibrotic” or Repair Activity in the Lung During Cardiopulmonary Bypass

Who is the Culprit?

To the Editor:

I read with interest the work of Deheinzelin and colleagues (November 1997) documenting the upregulation of collagen mRNA expression early in cardiopulmonary bypass (CPB). This study is clearly original and addresses the question of how deleterious several medical procedures potentially can be although first designed to allow the correction of life-threatening conditions. This is a lesson in medical history and what we must humbly learn day by day. CPB is a well-known risk factor of ARDS, and several inflammatory mediators have been identified in this respect. Although no projections have been drawn in the study of Deheinzelin and colleagues regarding how detrimental this raised transcriptional collagen metabolism could be in long-term pulmonary function of patients undergoing surgical correction for coronary disease, the results deserve reflection.

However, the lack of a control population makes me wonder what specific increased collagen mRNA levels can be in this setting. Indeed, at least one important confounding factor has not been considered: mechanical ventilation (MV). There is a body of evidence showing that conventional MV by itself is a stretch-induced generator of alterations in expression and production of several molecules, including inflammatory mediators and extracellular matrix proteins. This phenomenon can occur very early on in the beginning of MV and appears to be related to the level of lung inflammation. In this respect, it can also be important to know if lung specimens were taken in dependent or nondependent regions, and whether or not pre-CPB and post-CPB lung biopsies were sampled at the same place.

More generally, can one definitely exclude the idea that MV without CPB is able to upregulate collagen mRNA in lung tissues? I would strongly recommend control of these issues before drawing any further conclusions.

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To the Editor:

We read with great interest Dr. Lesur’s comments on our paper. In regard to the controls issue, besides using the prebypass lung as a normal lung control, no other controls were used in the study. Indeed, it would be very interesting to study a normal lung submitted to mechanical ventilation (MV) during a short period of time. However, other surgical procedures accompanied by pleural opening where the lungs are kept in constant MV cycling are not very common. We considered that any biopsy collection with an intact pleura would subject the patient to unnecessary morbidity and therefore added no other controls to the study. In our series, prebypass and postbypass biopsies were sampled in the same place and on a nondependent zone.

The most interesting question is, indeed, if MV alone is able to upregulate collagen mRNA. After the simple administration of MV, even in the absence of lung disease, signs of collagen overproduction could be detected. Recently, we published a study showing that ARDS patients ventilated according to a protocol designed to reduce lung damage had a better outcome. Avoiding such a fast repair response after lung damage could be one of the possible biochemical explanations for the significant lung mechanics and gas exchange improvements as well as the lower mortality in this new approach group.

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Cost-effective Pleurodesis

To the Editor:

Zimmer and colleagues (August 1997) make an important contribution to the literature in describing a prospective randomized study of pleurodesis by bleomycin vs talc slurry in patients with malignant pleural effusion. However, their conclusion that talc slurry is more cost-effective than bleomycin (or thoracoscopic talc poudrage) is not supported by either their data or the current literature.

They do not explain their differences in the hospital time requirements for the various techniques. Thus, bleomycin required a median of only 5 days in hospital, compared to 8 days for talc slurry. Since they state that “the thoracoscopy tube was generally removed 48 h following treatment,” it is not clear why one approach required 3 more days of hospitalization than the other. Much shorter hospital stays of 3.3 to 3.9 days are being reported with thoracoscopic talc poudrage. Since each day in