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Reply to the comment by Dr. Cole

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The answer to Dr. Cole's point must take into account the essential mechanical heterogeneity of the acutely asthmatic lung. We agree that the presence of "waterfall" dynamics cannot be excluded, as indeed could be the case in unit D (or part of it) in our Fig. 1. An external PEEP (PEEPe) level below the intrinsic PEEP of such units does not affect their volume if communication with the airway opening is maintained throughout expiration. A reduction in hyperinflation by PEEPe, as described in isolated case reports [1, 2], can occur only via suppression of a "ball-valve" obstruction (Fig. 1, unit C). Existence of the latter is favored, but not necessarily implied by flow-limitation in collapsible airways. Moreover, any gain achieved by PEEPe concerning the hyperinflation of unit C might be offset by aggravated distention of unit A, as well as any part of unit D not subject to expiratory flow limitation.

We do not mean to absolutely prohibit a prudent trial of external PEEP in acutely asthmatic ventilated patients, but, if at all performed, it should be quickly discontinued in absence of a clearly documented benefit in the form of reduced inflation pressures or improved hemodynamic status.

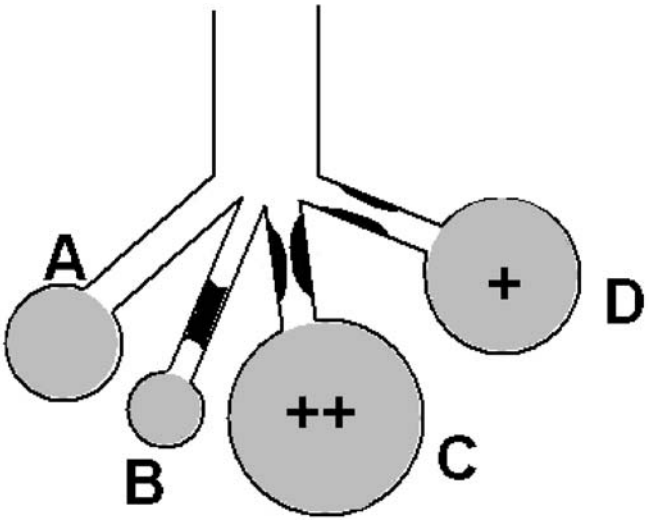

Fig. 1 Effect of variable amounts of airway obstruction on end-expiratory alveolar volumes and pressures

References

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