Correspondence

Measurement of bronchial reactivity: a question of interpretation

Sir,—In her review of bronchial hyper-responsiveness (Thorax 1981;36:561-5), Dr Tattersfield suggested that induced increases in response to bronchoconstrictor stimuli, such as demonstrated in our study with PGF_{2α} in the same issue (Walters *et al* Thorax 1981;36:571-4.), may be due to small changes in airways geometry below the threshold of detection by even sensitive measurements such as sGaw.

As Dr Tattersfield catalogued, a large number of studies on human subjects have failed to confirm a simple relationship between airways geometry and the occurrence of hyper-responsiveness in a variety of circumstances. It is therefore unlikely that small, undetectable changes in airways calibre could account for the large changes in sensitivity to histamine that we noted.

We have recently analysed the influence of baseline sGaw on histamine responses in groups of 28 normal and 10 mild asthmatic subjects. Increasing doses of histamine were inhaled at three minute intervals with measurement of sGaw at between one and a half and three minutes after each dose. A regression line was computed for the descending part of the log cumulative dose-response curve, and the dose of histamine causing a 20% fall in sGaw (D20) was calculated. We took this as an index of sensitivity and the slope of the regression line as an index of reactivity.

Baseline values of sGaw were lower in the asthmatics than normals ($p < 0.001$). Sensitivity was higher in the asthmatics ($p < 0.001$) but reactivity was in fact lower in this group ($p < 0.001$). This latter finding is in contrast to a previous study where the dose was plotted, probably inappropriately, on an arithmetic scale (Orehek *et al*. *Am Rev Respir Dis* 1977;115:937-43).

Linear regression analyses indicated a positive correlation between values of baseline sGaw and slope in both normals ($r = 0.62$, $p < 0.001$) and asthmatics ($r = 0.74$, $p < 0.025$). There was however no significant correlation in either group between values of D20 and baseline sGaw ($r = 0.1$ for normals and $r = 0.22$ for asthmatics).

Sensitivity to bronchoconstrictor agents does not, therefore, depend upon baseline airways calibre. Reactivity, on the other hand, does but not as expected if the airways were simply behaving according to the Poiseuille Equation (Benson *Br J Dis Chest* 1975;69:227-39). Other more complex mechanisms are probably involved in control of both airways sensitivity and reactivity.

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Notice

Duke University Medical Center PG Course Current Concepts in Diagnostic Imaging April 19-22 1982, Durham, North Carolina. Registration Fee: \$400 (US dollars); \$200 for those in training if accompanied by a letter from your department chairman. Cancellation will be subject to a \$50 fee for handling costs. This four-day postgraduate meeting is designed for radiologists but open to other physicians whether in training or practice. This continuing education programme will provide an update of newer imaging modalities in diagnostic radiology including computed tomography, nuclear magnetic resonance, emission computed tomography, nuclear scintigraphy, digital radiography, and various interventional techniques which will be covered in depth. For further information please contact Donald R Kirks, MD, Program Director, Department of Radiology, Box 3834, Duke University Medical Center, Durham, North Carolina 27710, USA.