

The very strong correlation between DLCO and diethylenetriamine pentaacetate (DTPA) clearance is of interest. Our previous DTPA work in fibrosing alveolitis [2] showed that individuals with a rapid DTPA clearance were more likely to show reduced gas transfer, but we did not look at direct correlations with gas transfer in that study.

However, the conclusion that a decrease in total lung diffusing capacity for carbon monoxide is related only to fibrosing alveolitis is not correct because we have shown in our previous studies, including that of KON *et al.* [3], that pure pulmonary vascular disease in scleroderma, in the absence of fibrosing alveolitis, is associated with a reduced total lung diffusing capacity for carbon monoxide. There is, therefore, still a role for follow-up high-resolution computed tomography measurements in individuals whose lung function changes are equivocal and when clearer information is required about a change in the parenchymal disease. Nevertheless, we do not routinely use high resolution computed tomography as a follow-up index because of the radiation burden but rather restrict its use to those patients in whom there is doubt about change in extent. We agree completely that early treatment of the parenchymal complication of systemic sclerosis is crucial and at present are co-ordinating the first European prospective double-blind placebo controlled study of the efficacy of treatment in fibrosing alveolitis of scleroderma.

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Human lung volumes and the mechanisms that set them

To the Editor:

In a recent paper, LEITH and BROWN [1] reviewed the "definitions of human lung volumes and the mechanisms that set them in the context of pulmonary function testing".

Discussing the definition of restriction, they quoted the 1975 American College of Chest Physicians (ACCP)-American Thoracic Society (ATS) joint committee [2]: "Restrictive Pattern (restrictive ventilatory defect): Reduction of vital capacity not explainable by airways obstruction". The authors further emphasized that "some find this definition unsatisfactory and substitute the criterion that there must be a reduction in [total lung capacity] TLC before a 'restrictive pattern' is said to exist". Among the "some" are the ATS and the European Respiratory Society who published their statements after 1975. The statement of the ATS [3], in 1991, was:

"a restrictive ventilatory defect is characterized physiologically by a reduction in TLC. One may infer the presence of a restrictive ventilatory defect when [vital capacity] VC is reduced and [forced expiratory volume in one second] FEV₁/[forced vital capacity] FVC is normal or increased If there is a contradiction between VC and TLC in defining restriction the classification should be based on TLC." The definition of the European Respiratory Society [4] in 1993, was: "A restrictive ventilatory defect is best described on the basis of a reduced TLC rather than from vital capacity measurements. The vital capacity, *i.e.* the volume change between [residual volume] RV and TLC, may be diminished by both restrictive and obstructive ventilatory defects; in the latter case it is due to an increase in residual volume due to (premature) airways closure (gas trapping) and airflow limitation at low lung volumes, leading to incomplete lung emptying. However, in small airways disease the RV is increased with no change in TLC; accordingly the VC is reduced (with a proportionate decrease in FEV₁). Hence, the vital capacity alone is of little use in discriminating between restrictive, obstructive and mixed ventilatory defects".

So definitions are here with us and I see no reason to go back to older ones when newer accepted definitions are available. To suggest VC as a criterion to define a restrictive defect would lead to overestimation of restrictive defects and conversely to underestimation of obstructive ones. In a recent paper on consecutive adult Caucasian patients who had undergone both spirometry and lung volume measurements, AARON *et al.* [5] reported that, in patients with a low FVC and normal (or above normal) FEV₁/FVC, only 153 out of 264 (58%) had a true restrictive syndrome, *i.e.* a decreased TLC. The others (111, 42%) had a normal TLC.

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From the authors:

We thank D. Stanescu for his comments and for his good summary of current definitions of restriction. We cited an old definition not to advocate it but rather to introduce the related physiological and practical problems.

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