

[Lung clearance index in cystic fibrosis]

[Article in French]

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PMID: 30686561 DOI: 10.1016/j.rmr.2018.03.007

Abstract

Introduction: Small airways' involvement in cystic fibrosis (CF) pulmonary disease is a very early event, which can progress sub-clinically and insidiously since it is poorly reflected by commonly used lung function tests.

State of art: Sensitive and discriminative tools are available to investigate small airways function. However their complexity and/or invasiveness has confined their use to research purposes and to some specialized research teams. By contrast, the multiple breath washout (MBW) test is more affordable and non-invasive. Lung clearance index (LCI), which is the most used derived parameter, is reproducible and much more sensitive than spirometry in detecting small airways disease. However, MBW is operator dependent.

Perspectives: The recent commercialization of devices assessing LCI launches MBW as a potential tool in routine clinical care, although its use currently remains mostly dedicated to research purposes. However, important differences in LCI between various equipment settings raise a number of theoretical questions. Specific algorithms should be refined and more transparent. Standardization of MBW is still an ongoing process. Whether other MBW derived indices can prove superior over LCI deserves further study.

Conclusions: In CF, LCI is now a well-established outcome in research settings to detect early lung function abnormalities and new treatment effects, especially in patients with mild lung disease. In these patients, LCI seems an attractive tool for clinicians too. Yet, further investigation is needed to define clinically significant changes in LCI and to which extent this index can be useful in guiding clinical decisions remains to be studied.

Keywords: Cystic fibrosis; Indice de clairance pulmonaire; Inhomogénéité de la ventilation; Lung clearance index; Mucoviscidose; Petites voies aériennes; Respiratory function tests; Small airways; Tests de la fonction respiratoire; Ventilation inhomogeneity.