

Peer Review File

Article information: <https://dx.doi.org/10.21037/jtd-23-1394>

Reviewer A

Comments: Very nice and extensive comments.

Reviewer B

Comments:

Comment 1: The author applied plethysmography to assess lung volume instead of multiple breath methods with Helium. Lung volume assessed by multiple breath methods of Helium does not show the equivalent to the one assessed by plethysmography in the patients with lesions, which does not connect to the airway. Whereas, two methods do not yield such a difference in the measures, in subjects without bullae. How was the characteristics of the participants of the study?

Reply 1: I would like to express my gratitude for reviewing my editorial commentary and for providing valuable feedback. I would like to respond to the comments you have provided.

My comments pertain to the paper, 'Feasibility of dynamic chest radiography to calculate lung volumes in adult people with cystic fibrosis: a pilot study' by Thomas Simon FitzMaurice et al., published in BMJ Open Respir Res. I am unaware of whether lung volumes were assessed by multiple breath methods of helium simultaneously with plethysmography. Therefore, I will refrain from providing responses to comments 1 and 2.

Changes to the text: no changes.

Comment 2: How was the correlation of DCR with lung volume assessed by multiple breath methods of Helium, if applicable?

Reply 2: I would like to express my gratitude for reviewing my editorial commentary and for providing valuable feedback. I would like to respond to the comments you have provided.

My comments pertain to the paper, 'Feasibility of dynamic chest radiography to calculate lung volumes in adult people with cystic fibrosis: a pilot study' by Thomas Simon FitzMaurice et al., published in BMJ Open Respir Res. I am unaware of whether lung volumes were assessed by multiple breath methods of helium simultaneously with plethysmography. Therefore, I will refrain from providing responses to comments 1 and 2.

Changes to the text: no changes.

Comment 3: This study showed the good correlation of DCR with lung volume. Does DCR provide the numerical values of lung volume? If so, how was the differences between the value assessed by DCR and the one by lung function tests?

Reply 3: Dynamic chest radiography (DCR) does not directly provide lung volume measurements. However, the total lung capacity (TLC) was derived from DCR using the Pratt's method¹, which calculates the projected lung area (PLA) at maximum inspiration in both left and right lung fields. The TLC

calculated by Pratt's method exhibited a positive correlation with TLC calculated by whole-body plethysmography (WBP) ($r=0.87$, $p<0.001$).

(1) Pratt PC, Klugh GA. A method for the determination of total lung capacity from posteroanterior and lateral chest roentgenograms. *Am Rev Respir Dis* 1967;96:548–52.

Changes to the text: no changes.

Comment 4: 4.How was the validity of the assessment?

Reply 4: The strong correlation observed between TLC derived from DCR and WBP in this study is consistent with reports by Loeve et al.² and Lacerda et al.³, who observed a positive correlation with TLC ($r=0.71$) in cystic fibrosis (CF) using ultra-low-dose CT. The simplicity of the DCR imaging method, along with its low inter-rater measurement error and high reproducibility, makes it a promising tool. Although further clinical experience is needed, it is reasonable to assume that its validity is not in question (This content is discussed in the original research paper's discussion section).

(2) Loeve M, Lequin MH, de Bruijne M, et al. Cystic fibrosis: are volumetric ultra-low-dose expiratory CT scans sufficient for monitoring related lung disease? *Radiology* 2009;253:223–9.

(3) Lacerda LS, Lopes AJ, Carvalho ARS, et al. The role of multidetector computed tomography and the forced oscillation technique in assessing lung damage in adults with cystic fibrosis. *Respir Care* 2018;63:430–40.

Changes in the text: no changes.

Comment 5: If DCR is easily applicable to the assessment of VC, DCR is of use for the assessment in ILD. Would it be presumed that the accuracy or capability of DCR varies among the diseases such as COPD, CF, and ILD?

Reply 5: For COPD, Ohkura et al.⁴ have reported its effectiveness in comprehensively assessing lung function and there have been numerous evaluations of diaphragm movement. For ILD, Ueyama et al.⁵ have reported a high correlation with parameters such as FVC. Regardless, DCR primarily focuses on measuring projected lung area (PLA), making it potentially valuable for diseases where lung volume assessment is a critical diagnostic criterion, a measure of severity, or for evaluating treatment efficacy. However, it is essential to acknowledge that DCR is still in the process of gaining wider acceptance and accumulating more user experience.

(4) Ohkura et al. *Respiration* 2020; 99(5): 382–388.

(5) Ueyama et al. *European Journal of Radiology*, 2021; 142: 109866.

Changes in the text: no changes.
