Dynamic compliance and reactance in older non-smokers with asthma and fixed airflow obstruction

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In older non-smokers with asthma and fixed airflow obstruction, X_5 measured by oscillometry reflects dynamic rather than static compliance. Distinguishing between dynamic and static compliance is important as they are due to different factors. https://bit.ly/3th0uEr

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To the Editor:

In asthma, abnormal mechanical properties of the airways and lung tissue leads to airway narrowing and changes in ventilation distribution [1]. Ventilation distribution is determined by the variation of time constants [2], the product of resistance and static compliance of individual lung units. Ventilation distribution is heterogeneous in healthy lungs, but even more so in airway diseases, including asthma [3]. This is because time constants are often even more heterogeneous in disease due to changes in resistances and compliances [3, 4]. Lung compliance measured under dynamic conditions, *e.g.* during breathing (dynamic compliance, or C_{dyn}), is sensitive to these heterogeneities in time constants. C_{dyn} decreases relative to static compliance (C_{stat}) with increasing ventilation heterogeneity [2, 3, 5], due to diversion of ventilation from lung units with longer to those with shorter time constants [6]. Hence C_{dyn} is a measure of lung function in relation to ventilation heterogeneity under tidal breathing conditions, that complements spirometry. However, C_{dyn} is not used clinically because it requires invasive oesophageal pressure measurements.