

ASTHMA PATIENT CASE STUDY

Oscillometry, the missing piece in asthma management



Oscillometry (OS) is a technology that measures lung mechanics during tidal breathing and has been shown recently to be a useful adjunct method to detect and monitor asthma in addition to other airways diseases.¹

Key measurements using OS:

Key Measurement	Description
R5	Resistance to airflow of the entire airway.
R5-19	Resistance heterogeneity of the airways. <i>Increased R5-19 signals potential small airway dysfunction.</i>
X5	Elastance of the respiratory system. <i>Decreased X5 implies increased tissue elastance.</i>
AX	Increased AX correlates with airspace de-recruitment, ventilation defects, and increased lung stiffness.

"...FEV1 [forced expiratory volume in 1 second] alone is not as good a predictor of uncontrolled asthma and future exacerbations as OS. Adding OS to FEV1 results in better identification of these poor asthma outcomes than either alone..."

-Galant et al.,2023²

Here, we present a case study of an asthma patient who is currently managed with ICS/LABA (budesonide/ formoterol (400/12 b.i.d.)) therapy. The patient is monitored with oscillometry and spirometry over a period of 10 months.¹

Data reproduced with modifications from Lundblad L. K. A. *et al.* 2021

FLIP OPEN TO FOLLOW THE PATIENT'S JOURNEY!

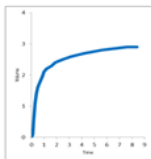
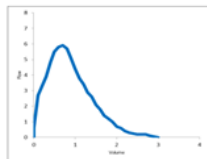


Month 0

Patient presentation

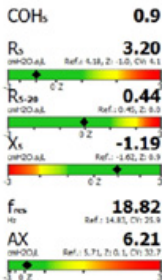
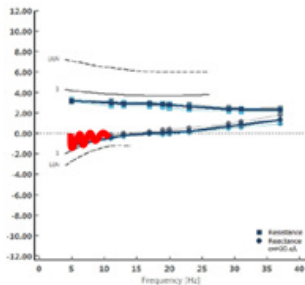
asymptomatic

Spirometry



Index	Base	%Pred
FEV ₁	2.12 l	73%
FVC	2.93 l	78%
FEV ₁ /FVC	72%	
FEF ₂₅₋₇₅	1.36 l/s	45%

Oscillometry



Observations

The patient is free of ventilatory inhomogeneity

Therapy

ICS/LABA (budesonide/ formoterol (400/12 b.i.d.))

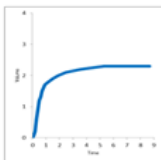
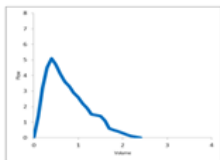


Month 6

Patient presentation

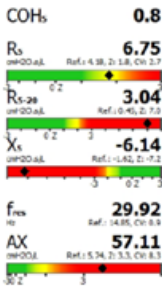
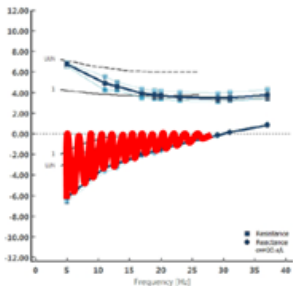
symptomatic

Spirometry



Index	Base	%Pred
FEV ₁	1.80 l	63%
FVC	2.40 l	64%
FEV ₁ /FVC	75%	
FEF ₂₅₋₇₅	1.29 l/s	44%

Oscillometry



Observations

High Ax indicate severe ventilatory inhomogeneity

Therapy

ICS/LABA (budesonide/ formoterol (400/12 b.i.d.))
+ ultra-fine ICS (ciclesonide 400 b.i.d.)

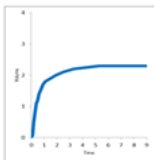
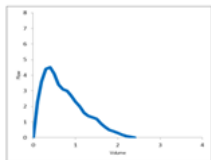


Month 9

Patient presentation

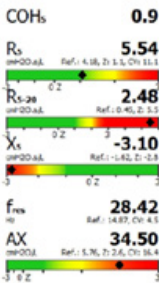
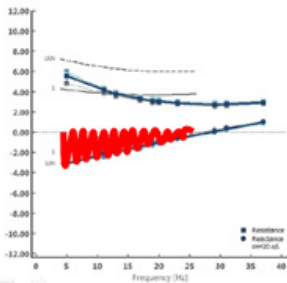
non-compliant to medication change and still symptomatic

Spirometry



Index	Base	%Pred
FEV ₁	1.77 l	62%
FVC	2.41 l	64%
FEV ₁ /FVC	73%	
FEF ₂₅₋₇₅	1.22 l/s	41%

Oscillometry



Observations

High Ax indicate moderate ventilatory inhomogeneity

Therapy

ICS/LABA (budesonide/ formoterol (400/12 b.i.d.))
+ ultra-fine ICS (ciclesonide 400 b.i.d.)

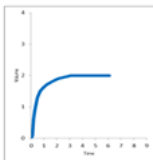
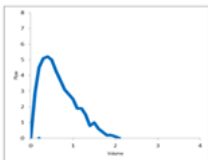


Month 10

Patient presentation

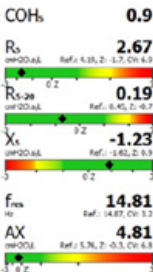
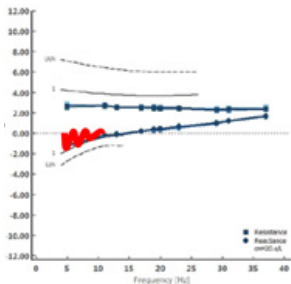
asymptomatic

Spirometry



Index	Base	%Pred
FEV ₁	1.64 l	57%
FVC	2.10 l	56%
FEV ₁ /FVC	78%	
FEF ₂₅₋₇₅	1.53 l/s	52%

Oscillometry



Observations

The patient is free of ventilatory inhomogeneity

Therapy

ICS/LABA (budesonide/ formoterol (400/12 b.i.d.))

Looking for additional information on oscillometry?

Contact us at info@thorasys.com

Reference: 1. Lundblad, L. K. A. *et al.* Applications of oscillometry in clinical research and practice. *Can. J. Respir. Crit. Care Sleep Med.* 5, 54–68 (2021) **2.** Galant, S. P. *et al.* Adding oscillometry to spirometry in guidelines better identifies uncontrolled asthma, future exacerbations, and potential targeted therapy. *Annals of Allergy, Asthma and Immunology.* 132(1):21-29 (2024).

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