Phenotypic differences between Asthmatics with and without Small Airways Dysfunction (SAD) as defined by lung oscillometry and spirometry (ERS 2024)

Asthma, Spirometry, Lung mechanics

D. Ghorpade*1*, S. Bardapurkar*2*, H. Vhora*3*, V. Singh*4*, P. Bhattacharyya*5*, R. Diwan*6*, S. Bardapurkar*2*, U. Singh*4*, S. Chauthmal*7*, S. Madas*7*, R. Swami*7*, A. Sable*7*, M. Lopez*8*, J. Gogtay*8*, S. Salvi*7*

1Pulmocare Research and Education (PURE) Foundation - Pune (Maharashtra) (India), 2Shree Nursing Home - Aurangabad (India), 3Vhora Chest Clinic - Baramati (India), 4Asthma Bhavan – Jaipur (India), 5Institute of Pulmocare & Research - Chakpachuria (India), 6Jyotirling Hospital – Kolhapur (India), 7Chest Research and Training - Pune (India), 8Cipla Ltd - Mumbai (India)

Background: Small Airways Dysfunction (SAD) is an emerging phenotype which is reported in over 50% of asthmatics. We aimed to compare the demographic and clinical differences between SAD and non-SAD Asthma across multiple centres in India.

Methods: Pulmonologists from 5 centres across India, who were members of the International Network for Lung Oscillometry Research (ARISE) took part in the study. Oscillometry was performed using the Antlia FOT (iCALTECH, Bangalore. India) and spirometry was performed using devices meeting ATS/ERS standards, among asthmatic patients visiting their clinics. SAD was defined using cut-off of ≥1 for R5-R20 or >65% for FEF25%-75%. Results: Out of data obtained from 1969 asthmatic patients, 1334 were eligible for the final analysis, of which 1069 (80.1%) had SAD. Phenotypic differences between SAD and non-SAD are shown in Table 1.

Table 1: Phenotypic differences between SAD and non-SAD	**SAD Asthma (n=1069)**	**Non-SAD Asthma (n=265)**	**p-Value**
Age (years ± SD)	46.0 ± 15.5	39.6 ± 16.1	< 0.01
Gender (F:M)	53%: 47%	46%: 54%	0.029
BMI (Kg/m²)	25.4 ± 4.6	24.4 ± 4.8	0.002
Cough	67.0%	73.4%	0.046
Shortness of breath	69.8%	53.9%	< 0.01
Wheeze	55.7%	41.8%	< 0.001
Chest Tightness	35.8%	27.3%	0.010
Severity (FEV1 % predicted)			
Mild	37.2%	88.6%	< 0.001
Moderate +Severe	62.8%	11.4%	
Oscillometry "+ve" and Spirometry "–ve"	**Mild:** 78.8% **Mod-Severe:** 21.2%	-	-
Oscillometry "–ve" and Spirometry "+ve"	**Mild:** 34.6% **Mod-Severe:** 65.4%	-	-

Conclusion: SAD asthma presents with more breathlessness, wheeze, and chest tightness than non-SAD asthma. Mild SAD is better detected on Oscillometry, while spirometry is more sensitive to diagnose moderate-severe SAD.