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Title: Overweight is related to small airway function assessed by impulse oscillometry system (IOS) in asthmatic patients with normal spirometry

Dr. Veronica 6345 Alfieri vero.alfieri@alice.it MD ¹, Dr. Roberta 6346 Pisi roberta.pisi@unipr.it ¹, Dr. Marina 6347 Aiello marina.aiello@unipr.it MD ¹, Dr. Panagiota 6348 Tzani ptzani@ausl.pr.it MD ¹, Dr. Chiara 6349 Scelfo chiara.scelfo@gmail.com MD ¹, Dr. Sara 10790 Ramponi sararamponi@libero.it MD ¹, Prof. Emilio 10791 Marangio emilio.marangio@unipr.it MD ¹, Prof. Dario 10792 Olivieri olivieri@unipr.it MD ¹ and Prof. Alfredo 10798 Chetta chetta@unipr.it MD ¹. ¹ Department of Clinical and Experimental Medicine, University of Parma, Parma, Italy .

Body: Background: The role of elevated BMI in asthma is controversial. Objectives: To investigate the relationship between overweight (BMI > 25 < 30 kg/m²) and total, proximal and peripheral airway resistance, by means of IOS in asthmatic patients as compared to controls. Methods: In 62 asthmatics (35 F; age 42 yr ± 15) with normal spirometry (FEV₁/FVC ≥ 70% and FEV₁ ≥ 80%) and BMI < 30 kg/m² and 38 healthy subjects (22 F; age yr 36 ± 12), respiratory resistance at 5 and 20 Hz and the fall in resistance from 5 to 20 Hz (R₅, R₂₀ and R₅-R₂₀, in kPa s l⁻¹) were measured as indices of total, proximal and peripheral airway resistance, respectively. Results: In all subjects and in asthmatic patients and healthy controls, when separately assessed, BMI was significantly related (p < 0.01) to R₅-R₂₀, but not to R₅ and R₂₀ values. Moreover, R₅-R₂₀ values, but not R₅ and R₂₀ values were significantly higher (p < 0.05) in overweight as compared to normal weight (BMI > 20 ≤ 25 kg/m²) asthmatic and healthy subjects. Conclusions: This study shows that overweight is strictly associated to small airway dysfunction both in asthma and in normal people. IOS may add further information to spirometry in asthma.