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LETTER TO THE EDITOR

Asthma control test in real life

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We read with interest the article of Caminati and colleagues [1]. We are grateful to them for the opportunity to discuss the asthma control assessment. These authors evaluated the validity of the Asthma Control Test (ACT) in a group of asthmatics. They observed that: i) ACT may not completely reflect airways inflammation and airways obstruction, and ii) ACT seems to be less reliable in patients with important nasal co-morbidity, including severe allergic rhinitis, nasal polyps, and rhinosinusitis, probably because nasal obstruction might affect asthma perception [1]. So, these authors concluded that ACT assessment is much more important in the primary care setting where ACT may be the unique tool for asthma control evaluation [1].

We completely agree with these authors about the relevant impact of upper airways disorders on asthma. On the other hand, we would like to comment on two aspects. The authors proposed a definition of controlled asthma based on: $FEV_1 \geq 80\%$ of predicted, negative response to bronchodilation testing, and FeNO values < 50 ppb. However, we think that this classification could be not compelling for all the asthma phenotypes [2,3]. FeNO is a marker of Th2/Type2-dependent inflammation, negative bronchodilation testing may be associated with intense inflammation, and normal FEV_1 values could be compatible with symptomatic asthma [4]. Moreover, rhinoscopy could be insufficient for diagnosing nasal polyps and/or rhinosinusitis [5].

As positive contribution, we would report our experience concerning a group of 619 asthmatics (361 females, mean age 40.22 ± 16.3 years), evaluated in a real-life setting. Our aim was to evaluate the possible impact of some factors (including: lung function, perception of respiratory symptoms assessed by the visual analogue scale (VAS), age, gender, body mass index (BMI), reported bronchial and/or nasal symptoms in the last month, rhinitis co-morbidity, and FeNO measurement) on the ACT outcomes. The patients were managed and

treated according to the GINA document [6]. The Hospital Review Boards approved the study procedure and written informed consent was given by all subjects.

Continuous variables were expressed as mean with standard deviation or median with range, categorical variables as number and/or percentage of subjects. The distribution of continuous data was assessed applying the Shapiro–Wilk test. Non-normal data differences were tested using the non-parametric Kruskal–Wallis test. The post hoc analysis was performed by the Mann–Whitney U-test. Frequencies of categorical variables were compared between groups by the χ^2 -square test. All statistical tests were two-sided with the significance level set at 0.05 and the estimated p values were adjusted for multiple comparisons using the Bonferroni correction method. Data were acquired and analyzed by R 3.0.1 software environment (R Core Team 2015 <https://www.R-project.org>).

Patients were subdivided in 3 sub-groups according to the ACT values: 25, 20–24, and >20 . The distribution of the variables as well as the correlations (with post hoc analysis) among the ACT outcomes and the other characteristics are reported in Table 1. In particular, FVC, VAS, gender, BMI, presence of symptoms, and FeNO were significantly different among the sub-groups (p values: 0.0020, <0.0001 , <0.0001 , <0.0001 , 0.0398, 0.0100, <0.0001 , and 0.0425, respectively).

These findings showed that only some parameters, including FVC, VAS, gender, BMI, symptoms, and FeNO, were significantly associated with the ACT grading. In particular, we underline the clinical practical role of both VAS and reported symptoms that are consistent with ACT grading. Therefore, the current real-life experience confirms the relative clinical relevance of ACT assessment in asthmatics. In this regard, we agree with Caminati and colleagues, who stressed the importance of an integrated approach, based on the evaluation of: clinical aspects, co-morbidities, functional parameters, and biomarkers of inflammation, for achieving the most accurate asthma

Table 1. Correlations between the ACT values and the other characteristics; p value = p value of the Chi-square test for categorical variables or p -value of the non-parametric Kruskal–Wallis test for continues variables; PH p -value = the post hoc Mann–Whitney U-test p value. All p values were adjusted by using Bonferroni method.

Characteristic	ACT			p value	Post hoc analysis	
	25 ($N = 100$)	20–24 ($N = 286$)	<20 ($N = 233$)		Comparison	PH p value
FVC % of predicted	105.12 (16.04)	103.66 (16.35)	98.18 (18.28)	0.0020	Partly Controlled Vs Well controlled Uncontrolled Vs Well controlled Uncontrolled Vs Partly Controlled	1.0000 0.0041 0.0009
FEV ₁ % of predicted	95.17 (17.33)	94.82 (17.36)	89.81 (21.06)	0.0634		
FEV ₁ /FVC	79.6 (10.88)	79.61 (11.75)	80.25 (12.92)	1.0000		
FEF _{25–75} % of predicted	72.45 (26.3)	74.51 (27.83)	69.87 (30.61)	1.0000		
VAS	8.19 (1.6)	7.42 (1.76)	6.46 (2.07)	<0.0001	Partly Controlled Vs Well controlled Uncontrolled Vs Well controlled Uncontrolled Vs Partly Controlled	0.0021 <0.0001 <0.0001
Age	41.4 (15.08)	38.56 (16.32)	41.9 (16.79)	0.8578		
Gender				0.0398		
Male	51 (19.92%)	128 (49.22%)	79 (30.86%)			
Female	49 (13.37%)	159 (44.01%)	153 (42.62%)			
BMI*				0.0100		
Normal	49 (17.07%)	144 (50.17%)	94 (32.75%)			
Underweight	8 (3.81%)	3 (1.42%)	10 (4.62%)			
Overweight	14 (10.14%)	65 (47.1%)	59 (42.75%)			
Obese	10 (14.93%)	25 (37.31%)	32 (47.76%)			
Symptoms				<0.0001		
None	42 (29.37%)	73 (51.05%)	28 (19.58%)			
Bronchial	11 (8.87%)	57 (45.97%)	56 (45.16%)			
Nasal	21 (30%)	33 (47.14%)	16 (22.86%)			
Both	25 (9.03%)	120 (43.32%)	132 (47.65%)			
Rhinitis				0.4634		
No	19 (11.66%)	72 (44.17%)	72 (44.17%)			
Yes	80 (17.62%)	214 (47.14%)	160 (35.24%)			
FeNO				0.0425		
≤25ppb	31 (20.13%)	75 (48.7%)	48 (31.17%)			
>25ppb	20 (12.99%)	59 (38.31%)	75 (48.7%)			

control assessment. Asthma control is the goal of asthma management and its assessment is really crucial in the daily practice [7].

However, our experience has a main limitation: in a cross-sectional study design, there is an ongoing analysis to explore the concordance between ACT outcomes and GINA asthma control grading.

In conclusion, we believe that asthma symptoms reported in the last month and current perception of asthma symptom severity will add fruitful information to asthma control assessment, as recently demonstrated [8].

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