Asthma Control Test (ACT) Score: Effectiveness, Validation, Reliability, and Response in OPD Patients of Our Place

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The prevalence of asthma continue to increase despite advances in knowledge about the path physiology of asthma and the availability of effective therapy.1 The Asthma control Test (ACT), Asthma Control Questionnaires (ACQ) and GINA Scales are widely used clinical and scientific tool to evaluate asthma, however it’s reliability in different population is not completely studied. We studied it in our place and correlated ACT score with GINA guidelines and ACQ. GINA classifies patients on categorical scale as controlled, partly controlled and uncontrolled asthma.1

Total 111 adult patients with new or previous diagnosed case of asthma were recruited for the study from department of Pulmonary/Respiratory Medicine, NKP Salve Institute of Medical Sciences and Research Centre and Lata Mangeshkar Hospital, tertiary treatment center situated at Vana Dongri Digdoh Hills, Hingna Nagpur. The spirometry was performed on Geratherm spirometer. Our patients were participant’s age 12 years and above, asthma diagnosed according to GINA guidelines, literate to complete questionnaire. The GINA evaluations of patients were done by asking the patients to recollect past 4 weeks symptoms and were supported by diaries and spirometry. ACT and ACQ scoring was done on standard questionnaires’ in vernacular language on 5 point and 7 point rating scale respectively.

The mean age of patients was 37.5 years with majority of them male 81.1%. Most of the patients i.e. 65.8% had exposure to tobacco. Cough was the predominant symptom followed by breathlessness. History of atopy was observed in 54.1% and the mean duration of symptoms was 16.97 years. Most of the patients were on inhaled corticosteroid therapy 67.6%.

The group of patients having ACT score ≥20 and ≤15 had an agreement with GINA controlled and uncontrolled group.

The group of patients having ACQ score of ≤0.75 had fair agreement with ACT score ≥20. ACQ ≥1.5 had a moderate agreement with corresponding ACT score of <20.

In present study we studied the agreement between the commonly used categorical and numerical scales used for evaluation of asthma. We compared ACT score with GINA (splitting it into uncontrolled and controlled + partly controlled groups) and ACQ. We observed a specificity of 67% with diagnostic accuracy of 65.77% with GINA and Specificity of 89.4% and Sensitivity of 68.52% with ACQ. We observed agreement between ACT and GINA, ACT and ACQ if proper cut off points are applied. However using recommended cut off points the ACT and ACQ classified significantly more patients as uncontrolled.

In ACQ using cut off point of ≥1.5 in the uncontrolled population the sensitivity was 68.5%. One of the study suggested ACQ -5 cut off 1 while comparing GINA to obtain a balance of sensitivity and specificity for the GINA criteria,2 however in the present study it would escalate the number of patients in GINA uncontrolled asthma.

In present study if we compared categorical GINA asthma control with numerical scales, using recommended cut off points for uncontrolled asthma, than the numerical scale classifies significantly more patients. In this framework, the GINA criteria are unable to correctly classify all patients with uncontrolled asthma patients.

We applied Kappa coefficient to determine the level of agreement between them. As shown in Tables 1 and 2 GINA had a better agreement with ACT <15 and ACT <20 with ACQ >1.5. O’Byrne et al.2 in his study comparing GINA and ACT observed the Kappa value was 0.61 when compared GINA uncontrolled with ACQ-5 > 1.5.

Summary

Using appropriate cut off point’s agreement can be observed between numerical and categorical scale. The choice of the scale use to evaluate asthma control has a clear effect on the amplitude of control both in an individual patient and in patient populations. This analysis proves that recommended cut off values and GINA were not in agreement and if considering GINA guidelines as a standard measure then the cut off values must be based on the representative population which is likely to undergo the test, and then the ACT score would be a reliable and effective numerical scale.

References