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Original Article

Who should Perform the Asthma Control Test: Patient? Physician?

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ABSTRACT

Objective: In the management of asthma disease, the aim is to keep the disease under control with treatment. Asthma control test (ACT) is the most widely used and important test that is easily figured out by the patients. This test is filled by the patient during the clinical practice. The present study aims to evaluate how the filling of ACT by the physician will affect the outcome and the concordance of results with clinical and functional parameters.

Methods: Patients who applied to the Outpatient Clinic of Chest Diseases in our Hospital between dates of June–August 2016 and who had at least one year of asthma diagnosis were included in this study. The patients filled their own answers to the ACT before the outpatient clinic examination. The same test was given to the patients by the doctor during physical examination.

Results: A total of 105 asthma patients were included in this study whose mean age was 38.8±13.6 (14–76) years, 58 (55%) of them were female and 47 (44.8%) of them were male. Mean ACT score of the cases was 14.5±5.8, while it was 13.9±4.4 in the tests filled by the doctor. 33.3% of the cases were college graduates, 23.8% of them were high school graduates, 38.1% of them were primary school graduates, and 4.8% of them were middle school graduates. A statistically significant difference was detected (p=0.02) between the results of asthma control tests filled by the doctor and that of those filled by the patients. It was detected that the status of education of the patient was the factor with the highest impact on the situation. It was found that ACT results filled by doctors were in higher concordance with clinical and functional parameters.

Conclusion: Our study demonstrated that ACT being filled by the doctor in societies with lower levels of educational status would yield results that were in higher concordance with asthma control.

INTRODUCTION

Asthma is a chronic inflammatory airway disease in which many cells play a role. Clinical features, such as shortness of breath, cough, wheezing, which regress spontaneously or with treatment, are observed. It is estimated that there are approximately 300 million asthma patients in the world.[1] In addition to personal factors, such as genetics and obesity, that affect the development of asthma, there are also environmental factors, such as allergens, infections, smoking and air pollution.[2,3] In updated guidelines, the concept of control is used to demonstrate the sufficiency of asthma treatment. Control of asthma is defined as the alleviation or absence of asthma complaints and clinical findings with treatment. By controlling asthma, the quality of life increases in the short term, and unwanted conditions, such as disease attacks, drug side effects and loss of respiratory functions, in the long term, are prevented.

Asthma control indicates to what extent the symptoms of asthma decrease and whether the treatment reaches its purpose. In the treatment of asthma, the aim is to achieve complete control. The objective is to get away from the triggering factors, evaluate and treat the disease and reduce the attacks in asthma patients. To control asthma in a patient whose disease is not under control, firstly, correct use of a drug and risk factors are questioned. In asthma, stepwise control therapy is applied. The treatment is evaluated every four weeks, and steps are ascended one by one until the complete control is achieved. Three months later, steps of therapy are descended, and the lowest treatment step that provides control is maintained.[1]

Various questionnaires have been applied to investigate whether patients' asthma is under control. Among these questionnaires, the Asthma Control Test (ACT), the Asthma Control Questionnaire (ACQ), and the Asthma

Treatment Assessment Questionnaire (ATAQ) are the most commonly known and used tests. Using a standard method provides accurate results in evaluating asthma control. ACT is an important test that is used most frequently. It is easily understood by patients and their families and shows whether asthma is leading a good or a bad course. ACT is a 5-question simple test that can be performed by both patient and the physician. It evaluates short-term, day and night symptoms, frequency of use of rescue beta-2 agonist treatment and restriction of daily activities.[4] Patients and their families can easily understand the level of their asthma by answering and scoring the questions in this survey and can easily understand whether their treatment is going well and whether their asthma is under control. Follow-up and control by a physician are recommended, especially for the patients with asthma, whose total score is 19 and below.

This test is filled out by the patient in clinical practice. When evaluating asthma control, differences were found between patients and physicians.[5] The present study aims to investigate how the ACT, which is a standard method, will affect the results if it is filled up by the physician and to evaluate the factors that affect the difference between the results, and the outcomes on the correlation between ACT and the clinical and functional parameters.

MATERIALS AND METHODS

Our study was a prospective cohort study and included patients who had the diagnosis of asthma or at least one year and admitted to Chest Diseases Polyclinic of our hospital between June and August 2016. Demographic features, smoking status, physical examination findings, respiratory function test results, and asthma treatment they were receiving, education status, monthly income and working status of patients who were followed up with the diagnosis of asthma were recorded. ACT was applied to the patients by the secretary before the outpatient examination, and the patients answered the ACT themselves first. Later on, ACT was applied to the patients by their physicians during the examination.

Meanwhile, all physicians read the test to patients in a standard way. The patients were not guided by the physicians during the application of the tests. However, they explained to the patients what exactly the questions meant. The compliance of the results of the tests performed separately by the patient and the physician, the factors affecting this, and the relationship between the results of the ACT and the clinical and functional parameters were statistically evaluated using SPSS 17.0.

Respiratory function test

Pulmonary function tests were carried out by an experienced laboratory nurse using a Master Screen PFT (JAEGER MS-PFT, Hoechberg, Germany) brand spirometry device.

Asthma control test

It is a simple and reliable questionnaire that can be applied by both the patient and the physician for the evaluation of asthma control in a short time. The reliability of ACT has been demonstrated and validated in patients with asthma. ACT consists of 5 questions. Patients score one to five points for each question. The total score of the five questions constitutes the test result. If the total score is 25, it is considered as full control, if it is 24–20, it is evaluated as partial control and if it is ≤19 then the asthma is not under control.[4]

Statistics

Statistical analysis of our study was performed in SPSS 17.0 computer program. Descriptive statistics were given as mean±standard deviation (SD), median and n percentages (%). Statistically, chi-square test, t-test and Mann-Whitney U test were used, $p<0.05$ was considered statistically significant.

RESULTS

A total of 105 asthma patients, including 58 (55%) female and 47 (44.8%) participants, with a mean age of 38.8±13.6 (14–76) years were enrolled in this study. Questioning

Table 1. Clinical and demographic characteristics of the patients

Mean age (years)	38.8±13.6
Male/female	47/48
Active smoker, n (%)	12 (11.4)
Cough, n (%)	53 (50.5)
Expectoration, n (%)	42 (40.0)
Shortness of breath, n (%)	89 (84.8)
Wheezing, n (%)	74 (70.5)
Allergic rhinitis	58 (55.2)
Respiratory system examination, n (%)	
Normal	47 (44.7)
Prolongation of expirium	16 (15.2)
Wheezing	43 (40.9)
Educational status, n (%)	
University	35 (33.3)
Lycée	25 (23.8)
Primary school	40 (38.1)
Literate	5 (4.8)
Employed, n (%)	63 (60.0)
Income level, n (%)	
Subminimum wage	11 (10.5)
Minimum wage	37 (35.2)
Above the minimum wage	57 (54.3)
Emergency service application within the last year, n (%)	11 (10.5)
Hospitalization within the last year	None
Systemic steroid use within the last year, n (%)	15 (14.3)

symptoms of the patients revealed the presence of dyspnea in 84.8%, wheezing in 70.5%, coughing in 50.5%, and expectoration in 40% of the patients, while 55.2% of the patients had a history of accompanying allergic rhinitis. It was learned that 12 patients (11.4%) were active smokers and 27 patients (25.7%) were ex-smokers (Table 1). It was seen that there was no hospitalization history in the last one year, and 11 (10.5%) cases had emergency service application in the last one year. Fifteen (14.3%) patients had a history of systemic steroid use in the past year. In respiratory system examination, 47 (44.7%) patients were considered to have normal respiratory sounds, while 16 (15.2%) of them had prolonged expiratory phase and 43 cases (40.9%) had wheezing. Pulmonary function test values of the patients are given in Table 2.

Considering the educational level of the patients, it was seen that 4.8% were literate only, 38.1% of them were primary school, 23.8% of them high school and 33.3% of them university graduates. While the household income of 11 (10.5%) patients was below the minimum wage, 37 (35.2%) patients were living with the minimum wage, and 57 (54.3%) patients were above the minimum wage. It was observed that 60% of the patients were actively working and 40% were unemployed.

The mean score of the patients' self-completed ACT was 14.5±5.8, and the mean score for the ACT completed by the physician was 13.9±4.4. According to the results of the ACT completed by the physicians, and patients, 26.8%, and 10.6% of the patients were evaluated as having asthma, respectively. According to the results of the ACT completed by the physicians, and patients, 33%, and 42.7% of the patients were evaluated as having full asthma control, respectively (Fig. 1). There was a statistically significant difference between the ACT scores obtained by physicians and patients (p=0.02). The educational status of the patient was found to be the most important factor affecting this result. The results of ACT questionnaire forms of the patients with lower educational levels completed by physicians were found to be significantly, and more closely complied with clinical and functional parameters. The results of ACT completed by physicians were seen to be more closely compliant with clinical and functional parameters.

Table 2. Respiratory function test results of the patients

	Mean±SD	Minimum-Maximum
FVC (mL)	3493±1088	1650–5610
FVC (%)	98.1±15.6	65–124
FEV1 (mL)	2713±1022	1080–4340
FEV1 (%)	91.5±16.9	50–120
FEV1/FVC	77.6±7.4	65–89
$FEF_{25–75\%}$ (L/sn)	2.45±1.27	0.63–4.44
$FEF_{25–75\%}$ (%)	64.4	20–119

FVC: Forced vital capacity; FEV1: Forced expiratory volume in 1 s; FEF25-75: Forced expiratory flow at 25-75%; SD: Standard deviation.

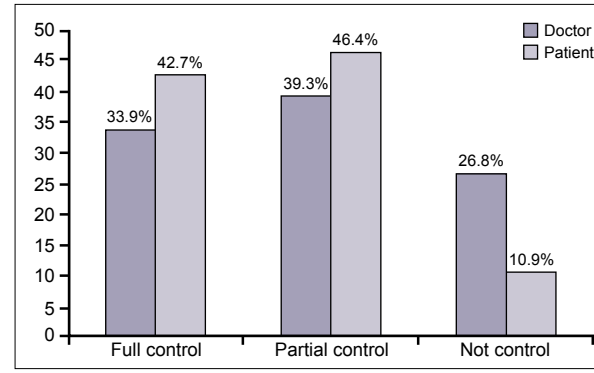

Figure 1. ACT results filled up by the patients and the physicians.

DISCUSSION

In our study, the findings showed that there was a statistically significant difference between the results of ACT performed by physicians and patients (p=0.02), and the educational status of the patient was the most important factor affecting this result. In addition, it was seen that the results of ACT performed by the physician were more compatible with the clinical and functional parameters, which was particularly significant in patients with low educational level.

In a study performed in Europe, the level of asthma control among patients with asthma was evaluated based on patient perception. It has been shown that patient perception does not match the symptom severity of asthma control.[6] In many studies similar to ours, it was found that physicians and patients disagreed about the issue of asthma control, and physicians more frequently evaluated patients as having asthma control.[7] In 96 out of 229 children who reported that their asthma was uncontrolled in a study using Test for Respiratory and Asthma Control in Kids (TRACK) was defined as having controlled asthma by their physicians. In contrast, only 26 (20.8%) of 125 children who reported that their asthma was controlled were considered as having uncontrolled asthma by their physicians. This difference causes physicians to underestimate asthma control, and therefore, to decide on non-optimal treatment.[8]

A study has shown that patients' perception of asthma control does not match with their symptoms. In this study, it has been shown that 50% of patients perceive themselves as fully controlled or partially controlled although they have severe asthma symptoms.[6] In another study in which 59% of the patients assessed their asthma as uncontrolled, only 42% of the group was evaluated as having uncontrolled asthma according to physicians' evaluation.[7] In another study using an asthma control test, 50% of the patients were evaluated as having uncontrolled asthma. This study also reveals that physicians and patients differ in individual assessments of asthma control. Based on the ACT scores applied by doctors, 39% of the patients who evaluated their asthma as uncontrolled were evaluated as having controlled or partially controlled asthma.[7]

In our study, 26.8% of the patients were evaluated as having uncontrolled asthma according to the results of ACT performed by the physicians, while 10.6% of the patients were evaluated as having uncontrolled asthma according to the results of ACT performed by the patients. In ACT performed by the physicians, 33% of the patients were evaluated as having fully controlled asthma, while according to the results of the ACT performed by the patients, 42.7% of these patients were evaluated as having asthmas under full control. In our study, it was shown that the results of ACT applied by physicians yielded closer results with patients' symptoms. In a study conducted for the evaluation of asthma control, in which asthma control was classified by scoring 1 to 5 (best control 1 point, worst control 5 points), patients were shown to overestimate asthma controls higher than their doctors.[9] In another study conducted by Juniper et al.[10] using ACT, patient symptoms and PEF values were used, and it was found that there was no significant change in asthma control evaluation by adding FEV1 value to assessments. Another study showed that 66% of asthmatic patients did not report their symptoms to physicians correctly.[11] This may result in the physicians not being able to fully detect the severity of the disease, which results in the administration of inadequate treatment. On the other hand, overtreatment can be administered by considering the symptoms not related to asthma. As a result, the perception of illness of asthma patients has a great impact on the management of treatment.

In a study in which patients evaluated asthma control, the elderly were shown to have a low perception of the disease. The same study also showed that patients with more serious symptoms had better asthma control perception, which has been attributed to the inadequate experience of patients with mild asthma symptoms in disease control management. In the study, any significant difference was not found between the level of education and the perception of disease control.[12] In our study, the level of education was found to be the most important factor affecting the difference between the filling the ACT questionnaire forms by the patient and the physicians.

In the study of Bijl-Hofland et al.,[13] it has been shown that patients with serious symptoms do not perceive the narrowing of the airways well. Similarly, in our study, 26.8% of the patients were evaluated as having uncontrolled asthma according to the results of the ACT applied by the physicians, while only 10.6% of the patients were evaluated as having uncontrolled asthma based on the results of the ACT performed by the patients. It has also been found that patients' FEV1 values -though not statistically significant- were lower than other patients. This phenomenon shows that patients with more serious symptoms and severe asthma are not able to perceive their illness well.

In previous studies evaluating the effects of mood on asthma disease perception, controversial results were obtained. Although one study has shown that mood disorders, such as depression, have an effect on the perception of disease, there are also studies showing that mood disorders do not have any effect on asthma disease perception.[14–16] In our study, any assessment was not made regarding the emotional state of the patients.

In a study, a significant difference was found between men and women according to the results of ACT applied by patients. The average ACT scores were detected as 18 and 20 points in female and male patients, respectively. While 59.4% of male, but 43.7% of female patients evaluated their diseases as fully controlled. However, any gender difference was not detected in the assessments made by physicians.[5] In our study, it was observed that gender did not directly affect ACT results. However, the educational status of the patients was found to be the most important factor affecting the difference between the results of the patient and the physician-filled ACT forms. It can be said that the lower education level of women in the study population should be considered.

The evaluation method of asthma control and how effectively it is evaluated are still debatable issues. If physicians are careful about the symptoms of the disease and can distinguish the symptoms of asthma, insufficient or excessive use of drugs will be avoided. In this study, ACT was used as the standard discriminator. It has been shown that the evaluation of physicians is more compatible with clinical and functional parameters.

As a result, it is important to use standard tests with proven validity and reliability when evaluating asthma control. It is a more sensitive method to evaluate asthma control with a standardized test to avoid inadequate treatment or excessive drug use. Our study has shown us that in societies with a low level of education, performing ACT by a physician can give results that are more compatible with asthma control.

This study has some limitations, such as being single-centered research with a limited number of patients and within a restricted time period. Thus, we think that it will be important to conduct multi-centre studies with a larger number of patients and it will be important for associations to organize studies on this issue.

Informed Consent

Prospective study.

Peer-review

Internally peer-reviewed.

Authorship Contributions

Concept: S.B.S., S.Ş.C., C.D.; Design: S.B.S., S.Ş.C., E.T.P.; Supervision: S.B.S., S.Ş.C., C.D., E.T.P.; Fundings: S.B.S., S.Ş.C., A.F., B.M.S.; Materials: S.B.S., A.F., B.M.S.; Data: S.B.S., A.F., B.M.S.; Analysis: S.B.S., C.D., E.T.P., N.K.; Literature search: S.B.S., S.Ş.C., E.T.P., N.K.; Writing: S.B.S., C.D., A.F., B.M.S.; Critical revision: S.B.S., S.Ş.C., B.M.S., N.K.

Conflict of Interest

None declared.

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Astım Kontrol Testi'ni Kim Yapmalı: Hasta? Hekim?

Amaç: Astım hastalığının tedavisinde, hastalığın tedavi ile kontrol altında tutulması hedeflenmektedir. Astım kontrol testi (AKT) günümüzde en çok kullanılan, hastalar ve aileleri tarafından da kolayca anlaşılan ve astımın iyi veya kötü seyirde olduğunu gösteren önemli bir testtir. Bu test klinik pratikte hasta tarafından doldurulmaktadır. Çalışmanın amacı AKT'nin hekim tarafından doldurulmasının sonucu nasıl etkileyeceğinin ve sonuçların klinik ve fonksiyonel parametreler ile uyumunun değerlendirilmesidir.

Gereç ve Yöntem: Çalışmaya hastanemiz göğüs hastalıkları polikliniğine Haziran–Ağustos 2016 tarihleri arasında başvuran ve en az bir yıldır astım tanısı olan hastalar dahil edildi. Hastaların demografik özellikleri, fizik muayene bulguları, solunum fonksiyon testi değerleri, almakta oldukları astım tedavisi, eğitim durumları, aylık gelirleri ve çalışma durumları kayıt edildi. Hastalar poliklinik muayenesi öncesi kendileri AKT cevapladılar. Aynı test muayene sırasında hastaya doktor tarafından tekrar soruldu. İki testin sonuçlarının birbirleri ile uyumu, bunu etkileyen faktörler ve AKT sonuçlarının klinik ve fonksiyonel parametreler ile olan ilişkisi SPSS 17.0 ile istatistiksel olarak değerlendirildi.

Bulgular: Çalışmaya yaş ortalamaları 38.8±13.6 (14–76) yıl olan, 58 (%55) kadın 47 (%44.8) erkek toplam 105 astım hastası alındı. Olguların AKT ortalama puanı 14.5±5.8, hekim tarafından yapılan testte ise 13.9±4.4 idi. Olguların 33.3'ü üniversite, %23.8'i lise, %38.1'i ilkokul, %4.8'i ise ortaokul mezunu idi. Astım kontrol testinin hekim tarafından doldurulması ile hasta tarafından doldurulması arasında sonuçlarda istatistiksel olarak anlamlı bir fark olduğu görüldü (p=0.02). Hastanın eğitim durumunun bunu etkileyen en önemli faktör olduğu saptandı. Hekim tarafından yapılan AKT'nin sonuçlarının klinik ve fonksiyonel parametreler ile daha uyumlu olduğu saptandı.

Sonuç: Çalışmamız bize eğitim düzeyi düşük olan toplumlarda AKT'nin hekim tarafından yapılmasının astım kontrolü ile daha uyumlu sonuçlar verebileceğini gösterdi. Bu amaçla astım çalışma gruplarının çok merkezli ve daha geniş hasta sayısı ile çalışmalar yapmasının yol gösterici olacağını düşünüyoruz.

Anahtar Sözcükler: Astım; astım kontrol testi; eğitim düzeyi.