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Asthma related quality of life in western Saudi subpopulation and its correlation to level of asthma control

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ABSTRACT

Asthma is a chronic health problem that encompasses the patient's entire lifetime, and causes significant mental and social problems in addition to physical symptoms. It is; therefore, considerably important to evaluate the quality of life of the patients in addition to the symptoms in order to gather full information about the health status of the patients.

Aim of the work: This study objective was to assess asthma related quality of life in a group of persistent asthmatic patients and its correlation to level of asthma control, and objective measure of pulmonary function (FEV1).

Patients and methods: 30 patients with persist asthma according to GINA classification of asthma were entrolled in the study, assessment of asthma related quality of life was done by Juniper mini-AQLQ (1999), level of asthma control by SINA-ACT questionnaire Arabic version, FEV1 by vitalograph and Laboratory measurement of total IgE.

Results: total AQLQ was more in males than females weakly correlated with age, ACT was significantly correlated with total AQLQ and three domains (activity, symptoms, environmental) while non significant correlation with emotional domain, no significant correlation between AQLQ and FEV1, total IgE, no significant difference between patients on omalizumab and patients not on the treatment regarding total AQLQ and its four domains except environmental domain, ACT or FEV1.

Conclusion: Asthma quality of life is strongly correlated to level asthma control rather than the objective measures of FEV1, so it complements the results of objective assessments. Asthma related quality of life questionnaire should be implemented in the routine assessment of persistent asthmatic patients.

Introduction

Asthma is a chronic inflammatory disorder of the airways in which many cells and cellular elements play a role, the chronic inflammation is associated with airway hyper-responsiveness that leads to recurrent episodes of wheezing breathlessness chest tightness and coughing particularly at night or in the early morning, these episodes are associated with widespread but variable airflow obstruction within the lung that is reversible spontaneously or with treatment [1]. The majority patients with bronchial asthma have an allergic component to their illness additionally; allergy or atopy is an important risk factor for developing bronchial asthma. Immunoglobulin E (IgE) plays an important role in mediating the allergic response in bronchial asthma [2].

Asthma is a chronic health problem that encompasses the patient's entire lifetime, and causes significant mental and social problems in addition to physical symptoms. It is; therefore, considerably important to evaluate the quality of life of the patients in addition to the symptoms in order to gather full information about the health status of the patients [3].

Asthma control may be defined in a variety of ways. In general, the term control may indicate disease prevention, or even cure. However, in asthma, where neither of these are realistic options at present, it refers to control of the manifestations of disease

Abbreviations: ACT, asthma control test; AQLQ, asthma quality of life questionnaire; COPD, chronic obstructive pulmonary disease; FEV1, forced expiratory volume in the first second; GINA, global initiative for asthma; HRQoL, health related quality of life; ICS, inhaled corticosteroids; IgE, immunoglobulin E; LABA, long acting B2 agonists; LAMA, long acting muscarinic antagonists; LTRA, leukotriene receptor antagonists; ORCS, oral corticosteroids; SINA, Saudi initiative for asthma.

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[4]. Asthma control determines patient reported outcomes such as functional status and quality of life [5].

Aim of the work

The objective of the present study is to assess asthma related quality of life in a group of asthmatic patients in western Saudi Arabia and its correlation to level of asthma control, and objective measure of pulmonary function (FEV1).

Patients and methods

This study was performed on thirty (30) patients from pulmonology outpatient clinic in Jeddah, Saudi Arabia in the period from October 2015 to June 2016. Patients with chronic persistent asthma according to GINA guidelines were included.

Inclusion criteria

Patient diagnosed as asthma according to Gina guidelines, patients with persistent asthma who were on controller medication together with reliever medication as needed, patients were categorized according to step of treatment [1] as follows:

Step1: (short acting B2 agonist on need).
Step 2: low dose (200–400 mcg budesonide, 100–250 mcg fluticasone) or leukotriene receptor antagonists.
Step 3: low dose (200–400 mcg budesonide, 250–500 mcg fluticasone) plus any of; long acting B2 agonists, LTRA, sustained release theophylline or medium or high dose inhaled steroids.
Step 4: medium (400–800 mcg budesonide, 250–500 mcg fluticasone) or high dose inhaled steroids (>800 mcg budesonide, >500 mcg fluticasone) plus long acting B2 agonist, or LTRA or sustained release theophylline (or tiotropium bromide [6].
Step 5: (oral prednisolone or omalizumab).

Patients were clinically stable with no exacerbation or hospital admission and no change in medication dosage or frequency in the last 4 weeks in order to avoid any bias in patients' opinion about their health status.

Exclusion criteria

All patients with cardiac, renal, hepatic disease, chronic obstructive pulmonary disease (COPD), bronchiectasis, interstitial lung diseases, tuberculosis, and chest infection were excluded by history examination chest Xray and laboratory investigations.

Patient consent to participate in the study was taken:

Assessment of asthma control

Using Saudi initiative for asthma (SINA) asthma control test questionnaire Arabic version; patients were administered a 5-item questionnaire assessing their asthma symptoms, use of rescue medications, and the impact of asthma on daily life. In asthma control test, a score of 25 points indicated full control, 20–24 points indicated controlled disease, 16–19 points indicated partial control, and score below 15 indicated uncontrolled disease.

Assessment of asthma related quality of life

Domains of health related to quality of life were expressed as four domains of the mini asthma quality of life questionnaire (Mini-AQLQ) [7]. The scale consisted of 15 items grouped under four sub-scales: symptoms (5 questions), emotion (3 questions), activity (4 questions), and environment (3 questions). The total score was recorded as the average of the scores in the 15 questions. The answers to each question are scored one to seven (1 = maximum impairment and 7 = no impairment). The mean score per domain then total score calculated.

Measuring total serum IgE

Patients were sent to be tested in Alborg Laboratory in Jeddah City, Saudi Arabia; Blood was drawn to be tested with RIDA Allergy Screen (R-Biopharm, Darmstadt, Germany). An automated evaluation was undertaken via digital pictures in RIDA X-Screen or RIDA maXi-Screen.

Measurement of FEV1

FEV1 was measured in the clinic by vitalograph asthma-1.

Technique of the procedure

patient data; age, height and sex were entered then he or she was asked to hold breath in as deeply as possible then hold breath put the device in his mouth, bit lightly then blow hard and fast as he or she can until end of test after 6 s then FEV1 L/m and FEV1% recorded with choosing the best of three trials [8].

Statistical analysis

Data were collected and statistically analyzed, for descriptive statistical analysis means, SD minimum maximum values were calculated. To determine the correlations between variables, parametric Pearson correlations were used. The correlation between asthma control tests, AQLQ, total IgE, and FEV1 was analyzed by multiple regression analyses. The testing of the difference between mean values has been done by the Students *T*-test of difference or ANOVA test, for statistical analysis a program SPSS 16 for Windows surrounding has been used and P value for significance was set at 0.05.

Results

This study was carried out on 30 patients with persistent bronchial asthma with age ranging from 20 to 70 years mean age 50.43 ± 13.49, (63.3%) were female, while (36.7%) were males, regarding treatment; 3.3% were on step 1, 10.0% step 2, 16.7% step 3, 46.7 step 4 and 23.3% step 5 according to GINA guidelines 2015 (see Table 1).

Regarding treatment 40% of cases were on high dose inhaled corticosteroids, 36.7% on medium dose, 10% low dose (GINA, 2015), and 13.3% did not use inhaled steroids 86.7% used monteulokast 10 mg, 86.7% of cases used long acting muscarinic antagonist (tiotropium bromide 18 mcg,, 33.3% of cases used steroid courses intermittently in the three month prior to study (20–30 mg prednisolone for 5–7 days) and 7 cases (23.3%) used omalizumab sc injection dosing is according to FDA medication guide in 2003 for treatment.

Asthma control test (ACT) was performed with minimum score 5 and maximum 24 with mean score 15.17 ± 5.06, 8 patients (26.7%) were controlled cases, 8 cases (26.7%) were partially controlled and 14 (46.7%) cases were uncontrolled asthmatics (see Fig. 1).

Asthma quality of life questionnaire was performed using Mini-AQLQ [7]. Total AQLQ score ranged from 16 to 89 with mean score 57.80 ± 16.89, mean score for activity domain 19.13 ± 5.66 symptoms domain 20.30 ± 6.01, emotional domain 10.43 ± 4.83, and environmental domain 8.00 ± 4.34. The ceiling score for one

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