

Pulmonary Rehabilitation Program on Quality of Life in Asthmatics Patients

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Abstract

Introduction: Asthmatics present chronic inflammation of the airways, leading to reduced airflow due to a reversible narrowing spontaneously or with treatment.

Objective: Evaluate the effect of a Pulmonary Rehabilitation Program (PRP) in asthmatics the Outpatient Clinic of the Faculty of Medicine of ABC.

Materials and Methods: Retrospective study where data Asthmatic patients were analyzed in the period 2012-2016 who participated in a pulmonary rehabilitation program. 62 patients were included, 55 women (88.71%) and 7 (11.29%) men, these 16 (25.81%) did not complete the program by abandonment or exacerbation. The parameters evaluated were the Quality of Life the St. George's Respiratory Questionnaire (SGRQ), the six-minute walk test (6MWT), and re-evaluation after 4 months of the program's start. The PRP was carried out 3 times a week for 4 months, lasting an hour each session.

Results: 46 patients were included in the average age was 61.06 ± 12.34 and $FEV1 = 58.16 \pm 16.72\%$. Regarding the 6MWT not statistically significant. The average oxygen saturation obtained at the beginning of 6MWT before and after, not statistically significant. The average score in SGRQ pre PRP was 36 ± 12 points and after the PRP was 27 ± 13 points statistically significant with $p < 0.001$.

Conclusion: The pulmonary rehabilitation program (PRP) has improved the quality of life in patients with bronchial asthma.

Keywords: Asthma; Exercise; Physical Therapy; Pulmonary Rehabilitation; Quality of Life

Introduction

Patients with asthma have chronic inflammation of the airways, leading to reduced airflow due to a reversible narrowing spontaneously or with treatment [1,2]. Chronic inflammation is associated with airway hyper responsiveness that leads to recurrent episodes of wheezing, breathlessness, chest tightness and cough [3]. It's a multifactorial condition determined by the interaction of genetic and environmental factors [4].

The diagnosis of asthma is suggested from the observation of symptoms, manifestations that strongly suggest this condition are: the variability of symptoms, the onset of irritating unspecific (such as smoke, strong odors and exercise), allergens (such as dust mites and fungi) and the worsening of symptoms at night and spontaneous improvement or after the use of specific medications for asthma. Furthermore, it is important to assess the history of atopy, family history, diffuse audible wheezing in the chest auscultation and eosinophilia explained [3,4]. In clinical practice the functional evaluation is performed by examining Spirometry, which is widely recommended in national and

international guidelines on the management of asthma [5]. It provides two important measures for diagnosis limitation to airflow in the airways: forced expiratory volume in first second (FEV_1) and Forced Vital Capacity (FVC) [5,6].

Asthmatics presented lower exercise tolerance caused by factors such as the degree of airway obstruction at rest, bronchospasm occurrence exercise-induced, decreased ventilatory capacity and increased sensation of dyspnea, determining factors for early interruption of physical activity leading [7-10], sedentary lifestyle, and emotional and social restrictions on patients with poor quality of life [11].

Proper asthma management can result in disease control as asthma has a significant impact on the lives of patients, their families and health system [3]. Among the goals of treatment are: to achieve and maintain control of symptoms; maintain the normal activities of daily living, including exercise; maintaining normal lung function or close to normal; prevent exacerbations; minimize the side effects of medications; prevent mortality.

Currently PRP is important in the set of interventions for the treatment of asthmatic subjects and it should be composed of patient education, physical education and psychological counseling and occupational [11-15].

Given the above the present study aims to evaluate and discuss the effect of PRP in patients with asthma clinic of the Faculdade de Medicina do ABC (FMABC); and propose a system of work that is more effective for these patients.

Methods

This is interventional study, which 46 participants aged over 18 years with a diagnosis of asthma classified according the Asthma Management guidelines of the Brazilian Society of Pulmonology were selected, directed by pulmonologist the Pulmonology Clinic of the PRP FMABC the study was approved by the research Ethics Committee of FMABC under CAAE number: 39399314.6.0000.0082; and all participants provided informed consent.

Inclusion criteria were those with diagnoses of asthma referred to PRP, clinically stable, and the criteria for exclusion disease that makes it impossible to safely perform the exercises and uncontrolled asthma and clinically unstable.

On the first day, the participants underwent evaluation with responsible physiotherapist PRP which is in: anamnesis; Health-related quality of life (HRQoL) through a Quality of Life the St. George's Respiratory Questionnaire (SGRQ). This survey quantifies the level of interference of Chronic Obstructive Pulmonary Disease (COPD) in the lives of their patients, considering three domains: symptoms, limitations in daily activities and the impact of the disease on the individual. In the first domain, it investigates the frequency and intensity in the last three months of cough, phlegm, shortness of breath, "wheezing", severe exacerbations, good days and bad with breathlessness and the "sizzle" is worse for morning [16]. The SGRQ is already used in our PRP for patients with COPD and was also used in asthmatic patients because of routine service and similarity of symptoms.

The physical capacity of the participants was assessed by the six-minute walk test (6MWT), following the guidelines of the American Thoracic Society (ATS). It was done on a flat land measuring 19 meters under supervision. All patients with comfortable clothes and appropriate footwear to walk all the time received voice command that encouraged the continuation and reported time (two, four and finally six minutes). The parameters such as blood pressure (BP), oxygen saturation (SpO_2) and heart rate (HR) were recorded at the beginning and end of test and note the distance during the 6MWT (6MWD). They received the instruction to repeat the route until the six minutes were completed. If needed, they could stop and rest, picking up where they left off. It was emphasized that the most important in the test was that the patient go as much distance as possible during the six minutes and warned the end of time [17].

After 16 weeks of PRP patients were reassessed and the same parameters of the first day were collected. The exercises were performed three times a week for an hour, divided exercises in aerobic for 30 minutes of exercise bike, followed by strengthening exercises for upper and lower limbs with dumbbells, ankle weights and elastic, initial weight to be used was given in 0, 5 kg with weekly increase of 0.5 kg load/week conditioning the maximum value according the individual capacity of each patient, the exercises were for 20 minutes and ending with a stretch for 10 minutes.

The analysis of data were performed by comparative tests between the pre and post-treatment variables: 6MWD and SpO₂ obtained in 6MWD and SGRQ score.

Results

The study included 62 asthmatic patients and 55 women and 7 men, this 16 did not complete the program, abandonment or exacerbation. Of the patients followed the average age was 61.06 ± 12.34 and FEV₁ = 58.16 ± 16.72%.

Regarding 6MWT before and after the PRP was obtained average 390m and 420m respectively, p = 0.182, that is, not statistically significant.

The average oxygen saturation obtained at the beginning of 6MWT conducted to assess and after PRP was 94% and 95% respectively, p = 0.249, and the average oxygen saturation obtained at the end of the 6MWT were respectively 93% and 94% p = 0.379, both not statistically significant. The average score in the SGRQ before PRP was 36 ± 12 points and after the PRP was 27 ± 13 points statistically significant with p < 0.001 (Table 1).

After PRP	Mean	Before PRP	Mean	P
DSMWT6' (m)	390m	DSMWT'6(m)	420m	0.182
SpO ₂ Initial (%)	94%	SpO ₂ Initial (%)	95%	0.249
SpO ₂ End (%)	93%	SpO ₂ End (%)	94%	0.379
SGRQ	36	SGRQ	27	0.001

Table 1: Evaluated variables between After and before pulmonary rehabilitation program (PRP).

DSMWT6' (m): Distance of Six-Minute Walk Test; SpO₂: Oxygen Saturation; SGRQ: Saint George Respiratory Questionnaire.

Discussion

One of the objective of the PRP is to improve the QOL of patients [13], many studies show that asthma patients have reduced QV [18-23], this study evaluated the QOL of patients with asthma through the SGRQ before and after PRP, they showed significant improvement with difference statistics on the obtained values.

A study conducted on 252 asthmatic variable gravity with baseline FEV1 between 25% and 131% predicted was applied general questionnaires to assess the impact of social limitation of the disease; the results showed that all investigated domain areas had significant correlation with the severity disease [24].

The PRP's objectives are to improve the QOL of patients, increase their physical capacity and independence in activities of daily living (ADLs), reduce symptoms of respiratory distress and admissions and reduce the psychosocial impact caused by the disease [14].

After 16 weeks of physical training, no significant difference from 6MWD before and after PRP, but patients report more willingness to perform their daily tasks.

In a supervised and multidisciplinary program for Chronic Obstructive Pulmonary Disease [25], improves quality of life and exercise tolerance that is associated with decreased dyspnea. However, our results showed improvement in the quality of life of asthmatic patients without significant changes in the walk test, despite a significant improvement in distance traveled, and may be related to the impact of rehabilitation to be greater in patients with COPD. Making up substantially the importance of this research to directs it to an association between patients with asthma and COPD included in a PRP.

Other studies show that patients with asthma have reduced quality of life [16-20], in the present study the patients have SpO₂ above 90% with a mean of 94% at the beginning of the PRP, so the values obtained and evaluated before and after PRP show, no significant difference remained within acceptable limits (> 90). the quality of life of asthmatic patients through the SGRQ was assessed before and after PRP, they improved with statistically significant difference in values, this result shows that the lack of air that involves the quality of life of these patients can improve with a PRP, showing the effectiveness of treatment due to decrease in the symptoms of asthmatic patients.

Conclusion

Participation in the Pulmonary Rehabilitation Program (PRP) has improved the questionnaire requirement of quality of life of patients who completed the program and had improvement in 6MWT important (7.6%), but not statistically significant. In the literature, we find little comparative data with Pulmonary Rehabilitation Program in asthmatics, which suggests future studies.

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