Research Article

ASSESSMENT OF HEALTH-RELATED QUALITY OF LIFE IN PATIENTS WITH COPD

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ABSTRACT

Introduction: Chronic obstructive pulmonary disease is characterized by significant airflow limitation associated with chronic inflammatory in the airways and lungs resulting in destruction of lung tissue. We used the Saint George's respiratory questionnaire to assess and evaluate the quality of life in patients of COPD. **Materials and Methods:** Our study included 100 patients with confirmed diagnosis of COPD. Data was collected at a tertiary level public sector hospital in western India. This cross-sectional study was done by evaluating the scores obtained in the SGRQ questionnaire with the data collected from pulmonary function tests and six minute walk test. **Results:** St. George's Respiratory Questionnaire showed statistically significant difference between the impairment seen in GOLD stage A and B. At initial visit the St. George's Respiratory Questionnaire MID of each anchor was RV-9.1 with relative of -15.6, forced expiratory volume in one second -8.1(-12 percent) and six minute walk distance -6.7(-14 percent). At three months follow up, the calculated St. George's Respiratory Questionnaire MID was RV -5.3 with relative -9.8 percent, forced expiratory volume in one second -6.7 with relative -10.4 percent and six minute distance -5.6 with relative -8.9 percent. **Discussion:** St. George's Respiratory Questionnaire cumulative score in our patients with two or less co-morbidities did not differ as compared to patients with no co-morbidities. This is in agreement with few studies done to evaluate SGRQ score in patients with COPD. Patients with more than two co-morbidities have been reported to have significant worsening in SGRQ score. We could not determine any statistical significance between the number of co-morbidities and GOLD staging in our study.

Keywords: COPD, lung, SGRQ, SF-12, GOLD staging

INTRODUCTION

Chronic obstructive pulmonary disease is characterized by significant airflow limitation associated with chronic inflammatory in the airways and lungs resulting in destruction of lung tissue.[1] It commonly affects adults greater than 40 years old who smoke, with an estimated preference 4 percent - 10 percent.[2] The disease course is usually progressive with the long-term decline in lung function and it is the third leading cause of mortality worldwide. Up to 90 percent of COPD deaths are reported to occur in low and middle income countries.[3] It is preventable and treatable disease that is commonly associated with comorbidities such as cardiovascular disease and significant systemic consequences such as skeletal muscle dysfunction.[4] Smoking is the most common risk factor for COPD worldwide; other risk factors include occupational exposure (example, organic and inorganic dust, chemical agents, and fumes), alpha 1 antitrypsin deficiency, and indoor air pollution (particularly from smoking that this caused from burning by a masseuse in confined spaces).[5] COPD has several complications including acute exacerbation, respiratory failure and pulmonary hypertension. Four year mortality rate ranges from 28 percent for mild-to-moderate COPD to 62 percent for moderate to severe COPD.[5] We used the Saint George's respiratory questionnaire to assess and evaluate the quality of life in patients of COPD. Will resume that patient with poor quality of life questionnaire score would correlate with clinically severe disease. We use pulmonary function test and 6 min walk test demonstrated the clinical severity of the disease.

MATERIALS AND METHODS

Our study included 100patients with confirmed diagnosis of COPD.

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Data was collected at a tertiary level public sector hospital in western India. The hospital serves 100000 pulmonary patients each year. Data was collected for a period of 6 months between the months of July 2021 to December 2021. St.George's Respiratory Questionnaire (SGRQ) was used to assess the severity of life impairment in patients with COPD. It is a disease-specific instrument designed to measure impact on overall health, daily life, and perceived well-being in patients with obstructive airways disease. Number of items-50 items. Number of domains & categories - 2 parts (3 components). Name of categories/domains - Part 1: Symptoms component (frequency & severity) with a 1, 3 or 12-month recall (best performance with 3 and 12-month recall); Part 2: Activities that cause or are limited by breathlessness; Impact components (social functioning, psychological disturbances resulting from airways disease) refer to current state as the recall. Scaling of items-Part I (Symptoms): several scales; Part II (Activity and Impacts): dichotomous (true/false) except last question (4-point Likert scale). Scoring -Scores range from 0 to 100, with higher scores indicating more limitations. Test-retest reproducibility-intra-class correlations were 0.795 to 0.900. Internal consistency- For the American version, Cronbach's α was > 0.70 for all components.[6] Validity Reported: - Significant correlations between total score and presence of cough, sputum, and wheeze; - Significant correlations between symptom, activity, and impact domains and other measures of disease activity (FEV1, FVC, SaO2 at rest, 6-MWD, MRC dyspnea grade, anxiety score, depression score, Sickness Impact Profile (SIP) total score, SIP physical and psychosocial domains)[7] Minimally important difference-Based on empirical data and interviews with patients, a mean change score of 4 units is associated with slightly efficacious treatment, 8 units for moderately efficacious change and 12 units for very efficacious treatment.[8] COPD diagnosis was confirmed with spirometry documenting forced expiratory volume in 1 second (FEV_1)/forced vital capacity (FVC) ratio < 0.7. COPD severity and health status of patient was assessed to help predict risk of exacerbations and to guide therapy; assess severity with GOLD classification of severity of airflow limitation. Patients were excluded if

they had any of the following: Any component of restrictive lung disease on PFT, underlying combined asthma and COPD diagnosis or active coronary artery disease or other comorbid illness precluding performance of the 6-min walk test. Permission to perform the study was obtained by the institutional ethics committee. This cross-sectional study was done by evaluating the scores obtained in the questionnaire with the data collected from pulmonary function tests and six minute walk test.

RESULTS

The study included 100 patients with COPD confirmed with spirometry documenting forced expiratory volume in 1 second (FEV_1)/forced vital capacity (FVC) ratio < 0.7. COPD severity and health status of patient was assessed to help predict risk of exacerbations and to guide therapy; assess severity with GOLD classification of severity of airflow limitation. Our study population consisted of sixty percent males and forty percent females. The mean age of the study population was 60years. Males had mean age of fifty nine years (2SD between 45 to 68) and sixty two years for females (2SD between 45-69). The mean duration of COPD was 11 years, in males 12 years and females 9 years. The mean forced expiratory volume in one second was 1.4L, which was 54percent of the predicted. Fifty two percent of the study population had smoking history with mean pack per year 20. Sixty five patients had GOLD stage 3 and 4 diagnosed within one week of being included in our study. The reason for visit to primary care physician within a week was shortness of breath or worsening of cough in patients in whom GOLD stage 3 and 4 was diagnosed. Twelve percent patients had reported COPD exacerbation during our data collection period. In the past one year, fifteen percent patient had hospitalization secondary to COPD exacerbation. Five percent GOLD stage 1, 6.7 percent GOLD stage 2 patients,8.9 percent GOLD stage 3 patients and 22 percent GOLD stage 4 patients had exacerbation. GOLD stage 1 and 2 had reported increased cough and sputum and GOLD stage 3 and 4 had reported more dyspnea on exertion. Patient with COPD had various comorbidity namely Heart failure, diabetes, systemic hypertension, hyperlipidemia, gastro-esophageal reflux disease and pulmonary artery hypertension. All patients in our study were under treatment, with seventeen percent patients receiving ICS alone, thirteen percent patients on SABA, twenty five percent patients on ICS with LABA, thirty percent patients on LAMA and remaining patients on short acting anti-cholinergic. St.George's Respiratory Questionnaire showed statistically significant difference between the impairment seen in GOLD stage A and B. All patients in our study underwent SGRQ at the initial visit and after three months. Patient characteristic remain the same in one and three month follow up. At the start, forced expiratory volume in one second was 34±8 percentage of predicted and the St. George's Respiratory Questionnaire cumulative score was calculated to be 56±9 which is mean± standard deviation. At initial visit the St. George's Respiratory Questionnaire MID of each anchor was RV-9.1 with relative of -15.6, forced expiratory volume in one second -8.1 (-12 percent) and six minute walk distance -6.7 (-14 percent). At three months follow up, the calculated St. George's Respiratory Questionnaire MID was RV -5.3 with relative -9.8 percent, forced expiratory volume in one second -6.7 with relative-10.4 percent and six minute distance -5.6 with relative -8.9 percent. We also used the distribution method in which St.George's Respiratory Questionnaire MID at initial visit was -7.1 with relative -9.2 and at three month follow up was -8.1 with relative -12.4 percent.

DISCUSSION

Our study includes a specific questionnaire designed to survey patients with diagnosis of chronic obstructive lung disease at all levels of severity. In our study, the St. George's Respiratory Questionnaire cumulative score was high for all the stages of COPD. There are few studies that are done with the similar scales as ours and they also report similar results.[9] They also demonstrated that the high St. George's Respiratory Questionnaire cumulative score was seen in GOLD stage A as well.[10] In our study we found that there was statistically significant difference between the St.George's Respiratory Questionnaire cumulative score in patients with GOLD stage two and three as compared to GOLD stage one and two and stage three and fourth. The scores were relatively high for patients with stage one and two since these patients have less severe symptoms and do not usually opt for medical intervention and hence they have more difficulty in performing activities of daily living with compromised quality of life. Some studies have raised a question on the utility of GOLD staging for determining the clinical severity of the patients diagnosed with COPD.[11] Some major studies also support the interpretation as seen in our study with approximately same values for St. George's Respiratory Questionnaire cumulative score as ours.[12] We had few patients who had exacerbation of COPD when the data was collected and their scores were not included in the statistical analysis. Even though we had not included such patients, the scores recorded for these patients were not exceedingly high as compared to patients who had GOLD stage one and two COPD diagnosis. Even these patients were found to have higher score as compared to the baseline healthy population. Some studies have also included SF-12 scores in patients with COPD. They have demonstrated that the physical component of the SF 12 score was lower in patients with COPD as compared to the general healthy population.[13] One study performed in United States compared the SF12 scores in patients with coronary artery disease and general healthy population with non-coronary artery heart disease. They found significant deficiency in SF 12 scores in population with coronary artery associated heart disease. Furthermore, they found that the SF 12 score of patients with coronary artery heart disease was significantly similar to the SF 12 score of patients with COPD.[14] One major study had included patients from multiple countries and they found that patients with joint disease, heart diseases, and GI disease have very low SF12 scores, with mean of 38 (2SD 24-42) and patients with COPD were found to have score lowers than these chronic conditions with mean of 34 (2SD 28-40).[15] Thus in conclusion the patient with CODP has been found to have severe debilitating affect in physical activity and poorer health outcomes. FACIT-F score is another modality to assess the quality of life. Some studies have assessed the FACIT-F score in patients with COPD and they found significantly lower score when comparing with general healthy population.[16] FACIT-F score has been especially studied in GOLD stage one and two and it was found that fatigue was the most common feature lowering the score. Other symptoms that have implicated in a lower score were cough, dyspnea and sputum production with former more commonly seen in GOLD stage one and two and latter two in GOLD stage three and four. Dyspnea on exertion was found to be a disease limiting factor in even GOLD stage one and two.[17] MRC dyspnea score in another useful scale to measure the patients overall ambulatory capacity and hence grade the disease severity. Studies have shown that patients mild disease have around 50-70 percent reduction in the activity level as compared to healthy general population and COPD patients with moderate to severe disease had 70-85 percent reduction in activity level as compared to the general population.[18] Cough and dyspnea were again found to be the major limiting factor during ambulation with cough being the prominent complain in patients with mild disease and dyspnea being the major complain in patients with moderate to severe disease. St.George's Respiratory Questionnaire cumulative score in our patients with two or less co-morbidities did not differ as compared to patients with no co-morbidities. This is in agreement with

few studies done to evaluate SGRQ score in patients with COPD.[19-20] Patients with more than two co-morbidities have been reported to have significant worsening in SGRQ score.[21] We could not determine any statistical significance between the number of co-morbidities and GOLD staging in our study. Data in our study was collected from a specialty clinic, and assuming patients who visit specialty clinic are more symptomatic and have more co-morbidity leading a referral by primary care physician, the study population was biased. Our study population did not accurately reflect the general population with COPD. But regardless of the severity of the disease, SGRQ score was higher than the baseline score for general healthy population signifying that we can safely make assumptions about the quality of life in patients in COPD in general. Furthermore, the mean duration of COPD in our patients was over five years for all categories hence the overall quality of life assessment should not have been affected to a greater extent.

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