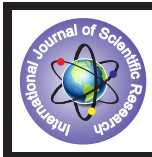


ASSESSMENT OF NUTRITIONAL STATUS OF PATIENTS WITH COPD BY SUBJECTIVE GLOBAL ASSESSMENT (SGA)



Medical Science

KEYWORDS : Nutrition, Subjective Global Assessment, COPD.

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ABSTRACT

Malnutrition is a major risk factor affecting the morbidity and mortality in patients of Chronic Obstructive Pulmonary Disease (COPD). A study of 54 patients admitted with COPD was done to assess the nutritional status using Subjective Global Assessment (SGA). The patients were categorised into well nourished, mild/moderately nourished and severely malnourished. There existed a higher prevalence of malnutrition in patients with lower BMI and more severe obstruction as documented by pulmonary function tests. Early assessment and intervention of nutritional status can improve the quality of life and change the course of disease in COPD.

INTRODUCTION

Chronic Obstructive Pulmonary Disease (COPD) is a major cause of morbidity and mortality across the globe. According to WHO 65 million people have moderate to severe COPD and is estimated to be the 3rd leading cause of death by 2030. Low and middle income countries shoulder much of the burden of the disease with almost 90% of COPD deaths taking place in these countries. Crude estimates suggest that there are 30 million COPD patients in India and they contribute to mortality in a significant and growing percentage.

The morbidity and mortality in COPD are influenced by several heterogeneous risk factors amongst which the changes in the nutritional status plays an utmost important role. Changes in the nutritional status like weight loss and loss of lean body mass are very important sequel in patients with COPD. Those patients that lose 15% or more of their weight within a year are at risk for under nutrition which primarily affect the quality of life and are independent prognostic indicators of morbidity and mortality even after adjusting for age, smoking, baseline BMI and lung function. There is complex interplay among various factors which can lead to weight loss. Malnutrition in these patients is due to multiple factors including increase in resting energy expenditure (REE), decreased food intake, effect of drugs, recurrent respiratory infections and importantly a high inflammatory response.

Patients with COPD benefit from nutritional assessment because the consequences of under nutrition include adverse effect on respiratory muscle function and mass that result in decreased respiratory muscle strength and exercise capacity. Furthermore, because under nutrition is also associated with decreased cell mediated immune response, altered antibody production and impaired cellular resistance of trachea bronchial mucosa to bacterial infections; these patients are at risk for respiratory infections, especially pneumonia and bronchitis.

Early nutritional intervention is important as it is easy to maintain weight than to regain lost weight. It is important to use a validated screening tool for detection and stratification of malnourishment in the patients of COPD. Subjective Global Assessment (SGA) is simple questionnaire developed to detect and identify the nutritional problem. SGA is useful in identifying patients at high risk for developing complications associated with malnutrition and has a predictive value similar to set of objective data considered as a whole and a level of agreement of more than 80%.

The advantage of SGA is its simplicity, reliability and reproducibility a quality that may recommend its routine use in assessment of nutritional status of patients with chronic illnesses.

MATERIALS AND METHODS

A cross sectional observational study was carried out on 54 patients with COPD admitted in L.G. General

Hospital, Ahmedabad between June 2013 to December 2013. Patients with comorbid conditions like heart disease, uncontrolled Diabetes, liver disease and renal failure were excluded as these may adversely affect the nutritional status of the patient independently.

All patients were assessed for the nutritional status with help of subjective global assessment questionnaire within two days of admission. The data was collected and filled in the prescribed SGA-form (designed by Detsky et al) acceptable globally. On basis of SGA grade the patients were categorised into three different categories - Well nourished (SGA-A), mild/moderately malnourished (SGA-B) and severely malnourished (SGA-C). Anthropometric measurements like height, weight and body mass index were assessed in all patients. Patients were encouraged to undergo pulmonary function test whenever possible. FEV1 (Forced expiratory volume in 1 second) and FVC (Forced vital capacity) were measured by spirometer. The severity of COPD in this study was established by Global Initiative for Lung Disease (GOLD) Criteria based on degree of airflow obstruction.

The nutritional status assessment was done on basis of the following format:

Criteria	A	B	C
Weight loss in 6 months	<5%	5-10%	>10%
Dietary intake	>90% of regular	70-90% of regular	<70% of regular
G.I. symptoms (nausea, vomiting, diarrhoea)	None	Intermittent	Daily >2 weeks
Functional capacity	Full	Reduced	Bedridden
Disease type	Inactive	Sundering (low grade)	Acute/active
Subcutaneous fat	Normal	Decreased	Severely decreased
Muscle mass	Normal	Decreased	Severely decreased
Dependent oedema	None	Slight	Marked
Ascites	None	Slight	Marked

RESULTS

A total of 54 patients (mean age 54±10 years; male/female- 48/6) were evaluated. No significant differences were found among the SGA groups in regards to the study population.

Table-1 Prevalence of malnutrition

Patient characteristic	SGA-A	SGA-B	SGA-C
Patient no.	12	18	24
Sex-male/female	10/2	16/2	20/2
Age years (mean= /-SD)	58±12	56±8	52±6

Table-2 Severity of COPD and malnutrition

Severity	SGA-A	SGA-B	SGA-C
Mild	8	8	4
Moderate	3	6	5
Severe	1	4	15

As per table-1 almost 2/3rd of the patients with moderate to severe COPD were undernourished.

As per table-2 60% of patients with mild COPD were found to be moderate to severe malnourished i.e. catabolic effect of COPD starts early in the course of the disease. Nutritional status was directly related to the severity of the disease.

Table-3 BMI relation with SGA

BMI range	SGA-A(12)	SGA-B(18)	SGA-C(24)
<20.0	6	10	18
20 - 24.9	4	8	6
25 - 29.9	2	0	0
>30	0	0	0

Nutritional status of COPD patients assessed by SGA matches with the anthropometric numerical values. Patients with more severe disease had a lower BMI and had SGA grade-B or C. Half of the well-nourished COPD patients had a BMI less than 20. So, BMI alone is not so accurate enough to define the nutritional status of COPD patients.

Table-4 PFT Values in relation with SGA

PFT indices	SGA-A(12)	SGA-B(18)	SGA-C(24)
FEV1	0.80+ 0.16	0.70+ . 25	0.52+0.22
FVC	1.34 + .27	1.17+ .22	0.91+0.29
FEV1/FVC % predicted	76.2 + 3.6	56.4 +9.6	46.3+ 9.0

There is a significant correlation between Spirometric values and nutritional status. The SGA scores were proportional with the pulmonary function parameters. Malnourished subjects had a more severe impairment of pulmonary function based on FEV1% predicted. However no direct association was found between the poor nutritional status and lung impairment, it becomes a vicious cycle that poor lung function leads to poor nutritional status and this in turn results in a further decline in the lung function.

DISCUSSION:

Patients with COPD are frequently malnourished (prevalence 25-80%).¹⁰ Altered nutritional status adversely affects the consequences like poor respiratory function, impaired quality of life and increased susceptibility to infections. Weight loss with decrease in lean body mass and fat store in approximately 30% of COPD patients. Hence, even with normal BMI patient may be undernourished.^{11,13}

Routinely clinicians are ignorant about the nutritional assessment of COPD patients. Thorough evaluation of nutritional status is critical as it predicts mortality and morbidity even after adjusting for age, smoking habits, baseline BMI and lung function.^{9,11}

There is a lack of a uniform biomarker for nutritional status of COPD patients. A combination of various anthropometric and clinical parameters facilitates the diagnosis of malnutrition in these patients.

In the present study we used SGA (subjective global assess-

ment) not only because it is simple , reliable , realistic and reproducible but it can overcome the problem associated with objective assessment.

The key advantage of SGA is that it not only includes questions regarding weight loss , gastrointestinal tolerance and functional capacity but also includes physical examinations to reliably validate the loss of muscle mass.⁹

In the present study as per SGA grading only 22 % of patients were well nourished (category A) and remaining 78 % were malnourished which are comparable to the study by Dr. B Gupta et . al. who observed them in 17 % and 83 % respectively. On subgroup analysis we observed severe malnutrition (44 %) and moderate malnutrition ((33 %) which were somewhat similar to observations by Dr.B Gupta et. al. (50 % and 36 % respectively) but somewhat greater than reported by Wilson et . al. (34.5 % and 20.6 % respectively). Higher prevalence of malnutrition in Indian population is usually due to socioeconomic reasons, ignorance , lack of access to quality healthcare and also due to consequences of COPD itself.

In general however , the optimal BMI seems to be between 21-25. The prognostic value of BMI was particularly convincing in subject with severe COPD and was present across the full scale of BMI.¹⁴ In the present study 62.9 % of subjects had a BMI < 20 kg / m² similar to 59.5 % by Dr.B Gupta and also 63.5 % by Mathews . The present study confirmed the loss of weight documented by previous studies on nutritional status in COPD patients and the weight loss was directly proportional to the severity of disease . These findings prove that unintentional weight loss and low BMI are related to increased risk of COPD exacerbations, frequent hospitalizations, need for ventilator support and mortality independent of the degree of airflow obstruction.¹²

Malnourished subjects have more severe impairment of pulmonary function based on FEV 1 % predicted. It is not clear whether the severity of lung disease is a cause for poor nutritional status or it is the poor nutritional status that propagates the worsening of lung function. The positive correlation between SGA grading and PFT variables in the present study are similar to the study results observed by Dr.B Gupta et. al.

The alarming rise in the global prevalence of COPD secondary to poor lifestyle is a major public health hazard with a high prevalence of poor nutritional status which contributes to the already heavily burdened and collapsed socioeconomic state. The adverse effect of nutritional abnormalities in COPD patients have made it necessary to provide more evaluation of nutritional status to reduce their rate of incidence and mitigate their impacts to provide a base for early intervention and correction.

Conclusion

On the basis of present study of subjects with COPD, we conclude that irrespective of the stage of disease, underweight is an important independent risk factor for morbidity and mortality. This study validates the SGA as a tool for nutritional assessment to categorize the nutritional status of COPD patients in Indian context. Due to higher prevalence of under nutrition we recommend regular use of SGA to be implemented in day to day practice. Further studies including large randomized controlled trials are warranted in the Indian population to verify the impact of severity of COPD on nutritional status.

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