Global Journals LaTeX JournalKaleidoscope™
Artificial Intelligence formulated this projection for compatibility purposes from the original article published at Global Journals. However, this technology is currently in beta. *Therefore, kindly ignore odd layouts, missed formulae, text, tables, or figures.*

How to Evaluate the Risk of Malnutrition in Patients with Copd?

Chandra Selvi[1]

[1]

Received: 7 December 2013 Accepted: 31 December 2013 Published: 15 January 2014

Abstract

Background: The risk of malnutrition in patients with COPD increases the length of hospital stay, early readmission rates and poorer prognosis. Malnutrition is a significant problem in COPD and often goes undetected and often untreated. Many patients with COPD suffer with poor dietary intake and consequently reduced muscle mass.Aim Objective: To evaluate the effect of duration of disease and malnutrition in patients with COPD.Material And Methods: Ten patients with COPD both male and female) aged 30-50 yrs were recruited in this study. After getting informed consent the subjects were instructed to fill the questionnaire for the history related to our study. The subjects Body Mass Index (BMI Kg/m2), Body surface area, Duration of Disease, Skinfold thickness (Caliper), Calories intake, and Pulmonary function tests (RMS Polyrite) were evaluated.

Index terms— malnutrition, COPD body mass index, skinfold thickness, calories intake, body surface area.

1 Introduction

rom 1950s useful screening tools such as body weight and body mass index have been used to evaluate the nutritional status. Patients who are underweight or losing weight voluntarily associated with severity of airflow obstruction are the poor prognostic sign in chronic obstructive pulmonary disease (COPD). The causes of weight lose in patients with COPD are multifactorial including decreased oral intake as malnutrition, the effect of increased work of breathing due to abnormal respiratory mechanics and the effect of chronic systemic inflammation. Malnutrition can be defined as weight less than 90% of the predicted value as given by the Metropolitan Insurance Company or body mass index (BMI) of less than 18.4 kg/m2. The quality of life and survival limitation of chronic obstructive pulmonary disease (COPD) could be due to exercise intolerance and alterations in skeletal muscle like muscle wasting, muscle weakness and muscle fatigue rather than pulmonary problems. (Rob) Patients with COPD are commonly characterized by thin, breathlessness and voluntary weight loss. Long term use of medications such as bronchodilators (malabsorption), Corticosteroids (peripheral myopathy), and antibiotics (Gastrointestinal disturbances) can indirectly affect the nutritional status of COPD patients. (Macklem 2001).Studies have been proved that reduced maximal expiratory flow (Faulkner et al 2006), FEV1 in COPD correlates poorly with exercise capacity **??** Lencer et al 2003). Hence this study was designed to evaluate the baseline parameters to assess the nutritional status in patients with COPD.

2 II.

3 Materials and Methods

4 a) Study population

Ten COPD male patients aged 30-50 yrs with clinically stable were recruited from chest & TB department of Sree Balaji Medical College and hospitals. The study design was explained to the subjects and their informed consent was obtained. The COPD subjects were diagnosed according to the criteria given by Global Initiative for Chronic Obstructive lung Disease (COLD) Patients history like duration of disease, diet intake were obtained by

questionnaire. Study was approved by the institutional medical Ethics committee of Sree Balaji Medical College, Chennai.

5 b) Parameters measured

Body weight (Kg) and height (cm) were measured with subjects wearing indoor clothing and BMI was calculated as by weight and height 2 . Pulmonary function test: Flow rates and lung volumes were determined using computerized spirometer (Medispiror). Forced inspiratory and expiratory maneuvers were performed three times and the best values obtained from the maximum inspiratory and expiratory flowvolume curves were used for comparison. Body surface area was calculated in m 2 . Skin fold thickness was taken in six sites of the body like biceps, triceps, subscapular, waist, knee and calf muscles by using digital skinfold thickness calipers. With the Skinfold Thickness and Body Surface Area, Total Body Fat was calculated. c) Statistical analysis Statistical analysis will be performed by using statistical package for social sciences (SPSS). Data will be expressed as mean ± standard deviation. The correlation between the parameters will be analyzed by using Pearson's moment product correlation analysis. Any p value <0.05 will be considered significant III.

6 Results

In our results Table **??** SFT-Skin Fold Thickness, TBF-Total Body Fat IV.

7 Discussion

Seventy percent of the COPD patients of our study with mild to severe disease had normal Body weight and BMI, this could be due to depletion of lean tissues (De Benedetto et al 2000).

Recent studies revealed that the regenerative capacity of skeletal muscle is impaired in mice with elevated circulating tumor necrosis factors (TNF) levels **??**Langen et al 2006), lower testosterone (Vliet et al 2005), due to chronic hypoxia and corticosteroid therapy (Kamischke et al 1998).

In our study BMI of patients with COPD were negatively correlated with disease duration. This prevalence of malnutrition may be due to systemic inflammation, Low dietary intake (chronic mouth breathing, aerophagia, Dyspnea, old age), bronchodialators, corticosteroids, antibiotics. Elevated circulating leptin level in COPD patients may affects dietary intake and consequently muscle mass and function **??**Schols 2003).

Expiratory air flow limitation is the key to diagnose the severity of disease and traditional physiological changes in patients with COPD. This could be due to both small and peripheral airway obstruction and consequent increase in airway résistance. Loss of small airway patency due to destruction of alveolar tissues may play important role. Low FEV1 , FEF 25-75% and FEV1% indicate the severity of disease of COPD patients. The airflow obstruction may the increase the cost of breathing (Aliverti and Macklem 2001) which cause structural changes in the respiratory muscles due to the continuous overload (Orozco-Levi et al 2001)

V.

8 Conclusion

Being an inflammatory disease COPD involves with lungs and affect other body tissues like bones and muscles, these are known as co morbidities. Diet and nutritional intake are important in COPD because they help to combat some of these co morbidities. So nutrition is an important therapy in the management of patients with COPD.

The energy requirements of a healthy person vary depending on a number of factors including: age; gender; body composition; current and past nutritional status; and basal metabolic rate (BMR). BMR may be defined as the metabolic activity required for the maintenance of life including respiration, heartbeat and body temperature.When people experience illness, injury or surgery, their BMR increases. This causes metabolic stress, which, if uncontrolled, can lead to weight loss and eventually malnutrition.Without sufficient energy, protein stores in the body are mobilised from skeletal muscle, resulting in loss of lean body mass. This protein is broken down via biochemical oxidation to meet the body's increased energy needs. If the person's diet does not contain enough protein, this will lead to a negative nitrogen balance **??**Bongers et al, 2007). A positive nitrogen balance is essential for tissue repair after illness or major trauma **??**Soeters et al, 2004) wasting of extremity fat-free mass but not with airfl owobstruction in patients with chronic obstructive pulmonary disease. Am J Clin Nutr, 71:733-8. [1]

1234 

Figure 1: Figure 1 Figure 2 Figure 3 Figure 4

1

a) Results
Characteristic features of study population

Figure 2: Table 1

2

Figure 3: Table 2 :

3

2014
Year

Subject Age (yrs)		Sex	Disease Duration	Weight (Kg)
1	45	F	20	

Volume BMI-Body Mass Index, BSA-Body Surface Area 2 40 F 2 3 52 M 8 4 38 F 2 5 47 F 15 6 37 F 25 7 57
XIV
Issue
I
Version
I

( )
F

Subject	Disease Duration Years	FEV?	FVC
1	20	44	58
2	2	38	47
3	8	41	50
4	2	35	45
5	15	35	49
6	25	35	42
7	2	46	55
8	40	37	47
9	16	47	57
10	5	40	50

PFT-pulmonary function tests, FVC-Forced vital capacity, FEV1-Forced Expiratory volume

Subject	Disease Duration	Cal Intake	Calorie Deficiency Sum(SFT)
1	20	1450	850
2	2	1165	1135
3	8	1400	900
4	2	1850	450
5	15	1450	850
6	25	735	1565

Figure 4: Table 3 :

[Schols et al. ()] 'Body composition by bioelectrical-impedance analysis compared with deuterium dilution and skinfold anthropometry in patients with chronic obstructive pulmonary disease'. A M Schols , E F Wouters , P B Soeters , K R Westerterp . *Am J Clin Nutr* 1991. 53 p. .

[Lencer et al. (2008)] *Exercise Limitation in Chronic Obstructive Pulmonary Disease Current Respiratory Medicine Reviews*, Pierantonio ; Lencer , Karin ; Wadell , Katherine Webb , ; O' Donnell , DenisE . November 2008. 4 p. .

[Weekes et al. ()] 'Exercise-induced quadriceps oxidative stress and peripheral muscle dysfunction in patients with chronic obstructive pulmonary disease'. Marc Weekes , Janice J Roig , D Eng Jeremy , Roadw , A Reid ; Couillard , F Maltais , D Saey . *Am J Respir Crit Care Med* 200. 2004. 2003. 9 p. . (Respiratory Medicine.)

[Van Vliet et al. ()] 'Hypogonadism, quadriceps weakness, and exercise intolerance in chronic obstructive pulmonary disease'. M Van Vliet , M A Spruit , G Verleden . *Am J Respir Crit Care Med* 2005. 172 p. .

[Benedetto et al. ()] 'In COPD patients, body weight excess can mask lean tissue depletion: a simple method of estimation'. De Benedetto , F , Del Ponte , A Marinari , S . *Monaldi Arch Chest Dis* 2000. 55 p. .

[Gray-Donald et al. ()] 'Nutritional status and mortality in chronic obstructive pulmonary disease'. P T Macklem K Gray-Donald , L Gibbons , S H Shapiro , , , J G Martin . *American Journal of Respiratory* 1996. 153 (3) p. .

[Aliverti ()] *Review How and why exercise is impaired in COPD.Aliverti A, Macklem PT Respiration*, Macklem Aliverti . 2001. 2001. 68 p. .

[Orozco-Levi (2001)] 'Review Structural and functional changes in the skeletal muscles of COPD patients: the "compartments" theory'. Orozco-Levi . *Broquetas J Monaldi Arch Chest Dis* 2001. 2001 Jun. 56 (3) p. .

[Rob CI WüstFactors contributing to muscle wasting and dysfunction in COPD patients International Journal of COPD] 'Rob CI WüstFactors contributing to muscle wasting and dysfunction in COPD patients'. *International Journal of COPD* 2007 (3) p. .

[Faulkner and Lenz ()] 'Stading JA Review Costeffectiveness of smoking cessation and the implications for COPD'. M A Faulkner , T L Lenz . *Int J Chron Obstruct Pulmon Dis* 2006. 1 p. .

[Kamischke et al. (1998)] 'Testosterone levels in men with chronic obstructive pulmonary disease with or without glucocorticoid therapy'. A Kamischke , D E Kemper , M A Castel , M Lüthke , C Rolf , H M Behre , H Magnussen , E Nieschlag . *Eur Respir J* 1998 Jan. 11 (1) p. .

[Langen et al. ()] 'Tumor necrosis factor-alpha inhibits myogenic differentiation through MyoD protein destabilization'. R C Langen , J L Van Der Velden , A M Schols . *Faseb J* 2004. 18 p. .