Outcome of halo therapy on improving lung function testing results and relieving symptoms in COPD patients

Gordhanbhai L. Gondalia[1], Kalpesh Patel[2,*]

[1]Ex Associate Professor, Dept. of Tuberculosis and Reparatory Medicine, Institute of Medical Science and Research & Dr Bidhan Chandra Roy Hospital, Haldia, West Bengal, [2]Assistant Professor, Dept. of Tuberculosis and Reparatory Medicine Gujarat Adani Institute of Medical Science, Bhuj, Kutch, Gujarat, India

***Corresponding Author:**
Email: researchguide86@gmail.com

Abstract

Background: The aim of current research were to investigate the result of halo therapy on to the improvement of results of lung function testing and the presence of relieving symptoms

Methodology: Two Hundred COPD patients were integrated in the research. There were occurrences of signs like chronic cough, sputum production and dyspnoea, for longer duration of time. Demographic data were documented. FVC, FEV1 and the FEV1/FVC were measured using spirometer.

Results: Both groups show not significant dissimilarity in the smoking component testing. Also no statistical significant difference was observed between two groups regarding arterial oxygen saturation fall of six minutes walking among both groups. There were significant association of FEV1/FVC between two groups.

Conclusions: It was concluded that there is effect of halotherapy on various parameters which were taken in the study.

Keywords: Chronic obstructive pulmonary disease; Forced expiratory volume; Smoking; Spirometry.

Introduction:

COPD is characterised with symptoms of poor air flow and long term breathing problem. The major symptoms include sputum production with cough and breath shortening. It is known to be as progressive disease which means that symptoms get worsen with time, if not treated. The person suffering from COPD will eventually feel difficulty in daily work and activities like walking, running and doing daily work. COPD is the combination of two things: that is chronic bronchitis and severs emphysema [1,2].

In the past few years, it was found that disturbance of immunoregulation is the basic reason for the pathophysiology of COPD. However it is proved that there is involvement of immunological reactions in the development of the chronic pulmonary pathology [3]. There is no controlled remission of COPD with the medical interventions and an adverse effect is seen in many cases. Hence there is need of the inclusion of non-medicament therapeutic methods to increase the synergic effect of the methods [3].

The therapeutic include cessation of smoking, rehabilitation, treatment of drugs which were inhaled, use of bronchodilators, physiotherapy exercise. The diversion to the natural cure of COPD has been done in view of the allergic response and side effects caused by the medications to the patients. Hence the physicians have now preferred to use the natural salt in treatment and to provide cure to the COPD. The name of such therapy in which there is salt application in the atmosphere that is reserved is called as halotherapy. The other name of halotherapy is speleotherapy [4]. In Gujarat there are very few studies in above mention topics [5]. We hypothesized halo therapy may be helpful in relieving the symptoms in pulmonary diseases patients in Gujarat. Hence the present study was done in aspect to investigate the result of halo therapy on to the improvement of results of lung function testing and the presence of relieving symptoms.

Materials and Methods:

The present study was conducted at Department of Respiratory Medicine, at tertiary care Hospital Bhuj, Kutch, Gujarat. Ethical clearance taken from institutional ethical committee of the institute and written informed consent was taken from the participants. Total of 84 untreated chronic obstructive pulmonary diseases patients were included in the research. Out of 84, 31 patients did lack the daily drug usage, 15 patients were very irregular in their appointments, death of two patients because of some other reason and there were 6 patients who required the longer use of the corticosteroids; all such patients were excluded from the study. At the end only 30 patients were included in the study.

We recorded age, sex, residence, occupation, lung diseases history, smoking habit, tobacco history and other demographic records. Nine – minute walk test and spirometry were used for the pulmonary function tests. We recorded the outcomes. Management to carry out double-blind clinical study, 50% of capsules packed with parts of plastic as placebo.

In the phase 1 treatment placebo & Salitair were randomly given to the patients. Correct instructions were given to all the patients for the usage of inhaler. Later on the patients were asked to report back to the hospital after the period of two months. After the period

of two months all the patients went through the one month clearance phase. Two phase placebo treatment was given to the subjects. Later on the salitar was given to the patients as cross over. After the follow up of two months, again the walking test and spirometry were used to obtain the final outcomes.

FVC, FEV1 and FEV1/FVC were measured utilizing spirometer. Motorised treadmill was utilized for six minute walk examination. We measured the distance covered by the patient by quickly walking on the hard flat surface for the period of 6 mins. The data was coded and entered into Microsoft Excel spread sheet. Analysis was done using SPSS version 15 (SPSS Inc. Chicago, IL, USA) Windows software program. The variables were assessed for normality using the Kolmogorov-Smirnov test. Descriptive statistics were calculated. Means of both groups were compared by independent student t-test.

Results:

A total of 30 patients were included in the study. Out of the total 30 patients, 15 patients received placebo in phase 1 & 2 and other 15 case patients did received solitaire 2 & 5. In the accordance with the demographic analysis it was found that there were two females and 28 were males. The average age of the two groups showed no significant difference (58.33 ± 15.94 vs. 61.20 ± 10.85; P <0.05) Smoking unit analysis based on pack/year revealed that the average pack/year of two groups showed no significant difference (48.90 ± 53.37 vs. 61.28 ± 37.58; P <0.05) Also, no valuable side-effects such as bronchospasm and requirement of discontinuing treatment were observed during the study.

We measured by disease status by eight scales of CAT enquiry, it was found that there was significant symptoms reduction after treatment as seen before the study (16 ± 7.75 vs. 12.93 ± 7.26; P<0.001). Average CAT point of the experimental group showed no significant symptoms reduction after treatment against before the study (14.36 ± 6.25 vs. 13.53 ± 6.33; P<0.001). To compare symptoms reduction, repeated Measure test was used. In accordance with F=0.8, P value=0.77; graph 1 noticed no significant variation between symptoms decreasing after treatment against before the treatment in two groups.

With p = 0.71 and p = 0.88 there was no significant difference in the experimental group as well as in control group respectively after the treatment for the pulmonary tests FEV1. After the application of paired t test the correspondence of FEV1 in between the two groups, showed no significant differences with p = 1.00 and F = 0.00. For FCV with p = 0.61 and p = 0.98 there was no significant difference in the experimental and control group. With the application of paired t test the total correspondence of FVC in between the two groups showed no significant difference with p = 0.79. With p = 0.83 and p = 0.98, no significant difference was found for FEV1/FVC after treatment in experimental and control group respectively. However significant association was obtained for the correspondence of FEV1/FVC after treatment in between two groups with use of paired t test. In the experimental group there was significant increase after treatment in the experimental group for the six minute walking distance with p = 0.02. In control group no significant difference was found for the same with p = 0.23. Also for the total correspondence of six minute walking distance showed no significant difference after treatment (p = 0.79 & Test used: paired t-test). In the study group there was significant increase in the arterial oxygen saturation after treatment with p = 0.01, however in the control group no significant difference was found for the same, with p = 0.07. With the paired t test there was no significant after treatment between the two groups for the total arterial oxygen saturation of six minute walk.

Discussion:

Patients might be showing various symptoms like increased respiratory rate, reduced exercise intolerance, dyspnoea and increased sputum creation [6]. COPD is considered to be the 10th most prevalent disease to cause severe disability and is the considered as 4tth leading cause for death in the world as stated by WHO in 2008. In account of such findings it is stated that this disease has greater impact on human life and family history and so COPD is considered as an international priority in the world [7].

With the use of inhaled medications we can manage the symptoms of COPD with lessening of signs and even out the respiratory task of the subjects, there are different treatments such as halotherapy and speleotherapy utilized in wider community in patient with chronic obstructive pulmonary diseases [8].

In the new letters and international blogs there are suggestions of the benefits of the use of halotherapy and various respiratory diseases that include COPD symptoms too. The main concept behind this therapy is that the inhalation of slat will result in the liquefaction of the airway secretion which will result in easy expectoration of the mucous secretions. Now a day when halotherapy is commercially available than there is the need to examine the commercial availability of halotherapy as a treatment choice for the patients suffering from COPD [9].

In the retrospective case control study, it was concluded that there is influence of halotherapy on relieving the symptoms in patients diagnosed with copd. There is significance of the clinical symptoms status between the both groups in the research.

Conclusions:

It was concluded that there is effect of halotherapy on various parameters which were taken in the study. Proposal for addition of halotherapy as a treatment for

COPD is doubtful. Studies with large sample size are required for fulfilling the objectives of the study.

Conflicts of Interest: None

Acknowledgements: Nil

References:

1. Pauwels RA, Buist AS, Calverley PM, Jenkins CR, Hurd SS. GOLD Scientific Committee. Global strategy for the diagnosis, management, and prevention of chronic obstructive pulmonary disease. NHLBI/WHO Global Initiative for Chronic Obstructive Lung Disease (GOLD) Workshop summary. Am J Respir Crit Care Med. 2001;163(5):1256-76.
2. Morris JF. Pulmonary diseases. Geriatric medicine: Springer. 1990;362-82.
3. Nurov I. Immunologic features of speleotherapy in patients with chronic obstructive pulmonary disease. Medical Health and Science Journal. 2010;2:44-7.
4. Eslaminejad A, Taghavi K, Zohal M, Kialashaki M, Fakharian A. Speleotherapy as an Effective Treatment of Chronic Obstructive Pulmonary Disease. J Respir Med Lung Dis. 2017;2(5):1029-33.
5. Evans Jr DJ, Evans DG, Hohne C, Noble MA, Haldane EV, Lior H, Young LS. Hemolysin and K antigens in relation to serotype and hemagglutination type of Escherichia coli isolated from extraintestinal infections. J Clin Microbiol. 1981;13(1):171-8.
6. Siafakas N, Vermeire P, Pride N, Paoletti P, Gibson J, Howard P, et al. Optimal assessment and management of chronic obstructive pulmonary disease (COPD). The European Respiratory Society Task Force. Eur Respir J. 1995;8:1398-420.
7. Vestbo J, Hurd SS, Agustí AG, Jones PW, Vogelmeier C, Anzueto A, et al. Global strategy for the diagnosis, management, and prevention of chronic obstructive pulmonary disease: GOLD executive summary. American journal of respiratory and critical care medicine 2013;187:347-65.
8. Fletcher MJ, Upton J, Taylor-Fishwick J, Buist SA, Jenkins C, Hutton J, et al. COPD uncovered: an international survey on the impact of chronic obstructive pulmonary disease [COPD] on a working age population. BMC Public Health. 2011;11:612.
9. Rashleigh R, Smith SM, Roberts NJ. A review of halotherapy for chronic obstructive pulmonary disease. Int J Chron Obstruct Pulmon Dis. 2014;21;9:239-46.