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ORIGINAL ARTICLE

Effect of oral Anabolic Steroids on BMI, Functional Capacity and Pulmonary Functions of under nourished patients of COPD

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ABSTRACT

Aim: Effects of oral anabolic steroids on BMI, functional capacity and pulmonary functions of under nourished patients of COPD
Methodology: All COPD patients outside pulmonary rehabilitation program, who met the inclusion criteria, were included. Subjects were given methandienone 5mg BD for six months. Weight, BMI, paO_2, peak expiratory flow rate, FEV1 was measured for all subjects initially and six months after treatment.
Results: There was significant improvement in weight (p <0.01), BMI (p <0.01), paO_2 (p 0.04), peak expiratory flow (p <0.01), six minutes walk distance (p <0.01), CAT (p <0.01) and mMRC scores (p <0.01) after 6 months therapy with anabolic steroid.
Conclusion: Treatment with Oral anabolic steroids has a significant effect on BMI and functional capacity of patients with COPD.
Keywords: BMI, COPD, oral steroid

INTRODUCTION

Incidence of COPD in 2010 was 11.7% worldwide[1]. It is 8th in the top fifteen leading causes of disability adjusted life years (DALYs) by 2030[2].

According to a research done in 2018, Pakistan has the highest incidence of COPD i.e.13.8%[3]. COPD is a multisystem disorder i.e. CVS, skeletal muscle dysfunction, osteoporosis and systemic inflammation[4].

The objective of the study was to find out effects of oral anabolic steroids on BMI, functional capacity and pulmonary functions of under nourished patients of COPD

METHODOLOGY

Study duration was from January to June, 2018 in pulmonology deptt. JPMC, Karachi after permission from IRB. All patients visiting COPD clinic of either gender, with severe COPD according to global initiative for obstructive lung disease (GOLD 4 and 5: FEV1 of <50% predicted), having BMI <18.5 kg/m^2 and clinically stable disease were included in the study. Patients with BMI ≥18.5 kg/m^2, on systemic steroids, liver disease, endocrine diseases, hypertension, IHD and malignancy were excluded. Ethical approval was obtained from ethical review committee. 60 patients were included and were given methandienone, 5 mg BD for a period of 6 months. BMI, paO2, peak expiratory flow rate, FEV1 was measured initially and after six months. COPD assessment tests (CAT) and modified medical research council scale (mMRC) for dyspnea was done initially and after six months. Data was analyzed on SPSS 17.

RESULTS

A total of 60 patients having COPD were included.

Table 1: Paired t-test after 6 months treatment

Variable	Mean ± SD (At baseline)	Mean ± SD (At 6 months)	P value
Weight (kg)	48.82 ± 5.09	50.65 ± 5.30	<0.01
BMI (kg/m^2)	17.91 ± 1.88	18.57 ± 1.89	<0.01
Mid-arm circumference (cm)	22.96 ± 1.14	23.16 ± 1.17	0.28
paO_2(mmHg)	68.13 ± 5.26	70.45 ± 5.09	0.04
Peak expiratory flow rate (L/min)	99.58 ± 11.77	105.98 ± 15.77	<0.01
FEV1 (%)	42.10 ± 4.76	42.20 ± 4.83	0.203
Six minutes walk distance (m)	345.04 ± 32.49	373.59 ± 33.44	<0.01
CAT score	16.67 ± 2.89	14.62 ± 2.89	<0.01
mMRC score	1.57 ± 0.79	1.13 ± 0.72	<0.01

CAT: COPD assessment test,
FEV1: forced expiratory volume in 1second,

DISCUSSION

In this study, BMI and weight was increased and the difference was significant with steroid treatment after six months. A study by Sharma et al[6] did not show results with nandrolone decanoate in COPD patients. Ferreira et al[5] revealed that stanozolol has some therapeutic benefits to patients having COPD i.e. 90% (n=23) and their weight significantly increased.

In our study, paO_2 and peak expiratory flow rate in patients of COPD significantly improved at 6 months treatment with steroids. This is inconsistent with the study done by Sharma et al[6]. In our study, there was no improvement in FEV1 after use of anabolic steroid. This is similar to the results of Pan et al[7], which showed no significant improvement.

In this study, there was no improvement in FEV1 initially and after six months treatment. In another study, FEV1 (140 ml) was enhanced initially and after one year therapy in treatment group (P< 0.05). FEV1 was increased by 30 ml after 2 years and by 60 cc after three years and difference were non significant [8].

In this study, there is improvement of six minutes walking distance initially and after 6 months. Another study showed decrease in six minutes walking distance but change was non significant[8].

In this study, CAT score and mMRC Dyspnea Scale showed a statistically significant improvement in functional capacity after six months with anabolic steroids therapy. The CAT score in another study was also improved significantly[8].

CONCLUSION

Anabolic steroids can improve the quality of COPD patients by reversing the effects of the disease. A six month course of oral anabolic steroid (methandienone) can have a positive effect in patients with COPD by increasing the weight, BMI and functional capacity.
Conflict of interest: Nil

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