



Service Priorities and Programmes Electronic Presentations

Convention ID: 166

Submitting author: Ms Hiu Wai, Amanda CHING

Post title: Physiotherapist I, Tuen Mun Hospital, NTWC

Evaluation of an interdisciplinary Pre-operative Pulmonary Prehabilitation Program for patients with advanced COPD prepare for surgical lung resection

(1)Ching HWA,(1)Suen MYAB,(1)Lam WSV,(1)Ma CCE,(1)Yip CPI,(1)Kwok TK,(1)Cheung PCT,(1)To WKR,(1)Poon YHP,(2)Chu CKA,(2)Sin KM,(3)Yeung KS (1)Department of Physiotherapy, Tuen Mun Hospital (2)Department of Medicine and Geriatrics, Tuen Mun Hospital (3)CCE Office, Queen Elizabeth Hospital

Keywords:

Pre-operative pulmonary prehabilitation program

Carcinogenic lung

COPD

Exercise training

Lung operation

Introduction

Cardiopulmonary insufficiency is the main reason against surgical treatment for possible operable lung cancer in patients with advanced chronic obstructive pulmonary disease (COPD). Pre-operative pulmonary prehabilitation program (PoPPP) aims at improving cardiopulmonary fitness may increase the chance for operation, reduce operative complications and shorten length of stay (LOS).

Objectives

To evaluate the functional outcomes and postoperative length of stay of an integrated in-patient pre-operative pulmonary prehabilitation program among patients with advanced marginal functional capacity.

Methodology

This was a pre- and post-test study. All carcinogenic and COPD patients were selected by respiratory physicians to rehabilitation wards with marginal functional capacity for lung operation. The PoPPP involves intensive aerobic exercise training and education for five days per week. Aerobic training includes treadmill training, upper limb and lower limb ergometer training and/or stepper training for 30 to 60 minutes. Outcome measures were (1) 6-minute walk test (6MWT), (2) incremental shuttle walking test (ISWT), (3) exercise training intensity and (4) duration. SPSS software version 11 and Wilcoxon Signed Ranks Test were used for statistical testing.

Result

From August 2013 to November 2015, a total of 15 patients (mean age of 64.20 ± 12.09 years old, 13 females and 2 males) were functionally fit for operation after this program. Average measured forced expiratory volume in 1 second (FEV1) among them was 1.21 liters ± 0.43 and the % predicted was $50.6\% \pm 16.4\%$. There were 11 carcinogenic lung patients and 4 COPD patients. They received an average of 18 ± 7

sessions of training. The post-program evaluation of 6 MWT (from mean value of $393\text{m} \pm 97.6$ to $512\text{m} \pm 143$ with $p=0.001$), ISWT (from mean value of $374\text{m} \pm 109$ to $480\text{m} \pm 158$ with $p=0.002$), exercise training intensity (from mean value of $2.51 \text{ METS} \pm 0.66$ to $4.19 \text{ METS} \pm 1.45$ with $p=0.01$) and exercise training duration (from mean $22.9 \text{ minutes} \pm 7.52$ to $37.1 \text{ minutes} \pm 9.55$ with $p=0.001$) were significantly improved. For operation, majority of patients (14 patients) received lung volume reduction surgery and 1 patient received bullectomy. 11 of them discharged uneventfully and the average LOS was 8.1 ± 1.6 days. Four patients complicated by pneumothorax and the LOS was 20.0 ± 10.8 days. Conclusion Our study showed that the preoperative pulmonary rehabilitation program was an effective program to improve functional capacity in carcinogenic lung and COPD patients with marginal functional capacity for operation.