Service Priorities and Programmes

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Submitting author: Ms Lai Ping, Coco KOO
Post title: Physiotherapist I, Tuen Mun Hospital, NTWC

Lung Recruitment and Cough Assist Exercise Program to Maximize the Lung Function of Children with Neuromuscular Disease

Koo LP (1), Chan NC(1), Lao LM (1), Lam SY(2), Leung SP (2), Auw Yang CN(1), Poon YHP(1)
(1)Department of Physiotherapy, Tuen Mun Hospital (2)Department of Paediatric and Adolescence, Tuen Mun Hospital

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Introduction

Children with Neuromuscular Disease (NMD) have to face progressive deterioration in their physical conditions and finally will affect the respiratory functions. Physiotherapy intervention monitoring the disease progression as well as equipping them with special lung recruitment technique such as Glossopharyngeal Breathing (GPB) and assist cough technique may help to alleviate their symptoms and maximize the respiratory condition. A new respiratory program for children with NMD has been introduced in NTWC since 2013. The aim of this program is to empower patients to learn the respiratory techniques before the deterioration of lung conditions.

Objectives

The aim of present study is to evaluate the effect of the lung recruitment technique (GPB) and the manual assist cough technique on the respiratory function of NMD children.

Methodology

Children with NMD were referred by Paediatric respiratory team to join the program. All the patients and their carers have not learned GPB and proper assist cough techniques before. The respiratory functions on forced vital capacity [FVC], peak expiratory flow rate [PEFR] and peak cough flow [PCF] were assessed in the first session. The GPB exercise was taught to patients, and the manual assist cough technique was practised by the parents. Home exercises for patients and carers on GPB exercise and assist cough technique were prescribed and practised daily. Monthly follow-up was given to both patients and carers. The respiratory parameters

[FVC, PEFR and PCF] were reassessed at the sixth month. Subjective evaluation on the patients on the respiratory outcomes and carers' satisfaction was also monitored.

Result

Results: Preliminary results with seven patients, 4 boys and 3 girls (mean age of 14±4 years old), were analyzed. All the respiratory outcomes in FVC, PEFR and PCF showed improvement in their mean values at the sixth month follow-up. The mean value of FVC improved from 1.85±0.70 litres to 1.94±0.72 litres, PEFR improved from 215.74±89.30 litres/minute to 229.17±108.92 litres/minute; and PCF improved from 201.20±89.35 litres/minute to 236.29±116.09 litres/minute. No adverse event was noted during the intervention period. The satisfaction level to the program and the confidence level of patients and their carers in maintaining patients' respiratory conditions were between 70 and 100%. Conclusions: The respiratory program with lung recruitment and cough assist techniques were found to be helpful for patients with NMD. Both the patients and their carers had reported with high confidence in performing the skills after the intervention program, and they felt being empowered to maintain the respiratory condition of patients. In fact, NMD patients helplessly face with deteriorating respiratory condition with time. Nevertheless, data shown in this program depicted that early intervention in equipping patients with these self-help techniques may defer the unavoidable deterioration in respiratory condition. All in all, early intervention and regular monitoring of the chest condition are definitely beneficial to children with NMD.