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Establishing a Post-Acute Covid-19 AHP Led Rehabilitation Clinic

C. Elliott, S. McCaul, J. Hayes

Dept. of Respiratory Medicine, Cavan/Monaghan Hospital RCSI group.

Abstract

Aim

We assessed the effectiveness of an AHP-led rehabilitation service for patients with Covid-19 respiratory failure post-discharge from Cavan Hospital.

Methods

Of the 140 patients discharged from Cavan hospital with Covid-19, from March to June 2020, 3.6% required MV or HFNC. Using BTS guidelines a pathway was established. Patients underwent a 6 week post discharge telephone assessment. Of the 12 eligible patients only four agreed to participate. Assessments included mMRC dyspnoea score, Nijmegen questionnaire and HADS score. Patients completed an 8 week program including aerobic and endurance training with interval training at 10 stations. Focussed strength exercise was added as required.

Results

All three patients who completed the program had a real (> 20%) improvement in 6MWT, mMRCC dyspnoea score (1.0) and HADS. No change was seen in O2 saturation. All patients improved on IMSTS (68%, 11% and 41%).

Conclusion

An AHP led clinic is a safe and cost effective means of providing pulmonary rehabilitation for patients following Covid-19 pneumonitis.

Introduction

Covid-19 arrived in Ireland in March 2020 with immediate impact on those affected with significant loss of life and prolonged periods of illness[1]. From March to June 140 patients were discharged from Cavan Hospital following Covid-19 infection. Of these 3.6% were admitted to Intensive Care (ICU) for mechanical Ventilation (MV). A further 9.3% of patients were required non-invasive ventilation (NIV) or high flow nasal cannula (HFNC). Pulmonary rehabilitation is now accepted as demonstrating significant improvement in exercise capacity and quality of life in patients with respiratory disease. Previous studies on patients with Middle Eastern Respiratory Syndrome (MERS) and Severe Adult Respiratory Syndrome (SARS) demonstrated reductions in respiratory functions and exercise tolerance[2, 3]. As many as 35% of patients demonstrated significant mental health issues such as post traumatic stress syndrome, depression and anxiety. Initial studies indicate ongoing pulmonary complication post Covid-19 pneumonia[4]. The aim of our study was to assess the effects of a physiotherapy led post-acute Covid-19 rehabilitation program for patients admitted with severe pneumonitis

Methods

We developed a pathway based on the British Thoracic Society guidelines[4] for follow up of patients with post Covid-19 pneumonitis following the initial tranche of the outbreak in June 2020. It was agreed that due to the high number of patients discharged from Cavan General Hospital after treatment for COVID-19 and the limited resources available, only patients who were admitted to intensive care or treated with either continuous positive airway pressure or high flow oxygen therapy were included. Therefore a total of 12 patients were included. The pathway consisted of a telephone based assessment 6 weeks post discharge with a face to face assessment at 12 weeks[5]. Patients enrolled were assessed by a six minute walk test (6MWT), one minute sit to stand test (1STS), Borg score, modified Medical research Council (mMRC) dyspnoea, Nijmegen Questionnaire for dysfunctional breathing and the Hospital Anxiety and Depression Scale (HADS). Chest X-ray and pulmonary function tests were ordered as required. The program involved twice weekly aerobic and endurance training. Interval training was used with 10 stations. Strength training focused on larger muscle groups with weights added based on symptom profile. Borg score, heart rate and oxygen saturation were monitored throughout.

Results

All twelve of the patients included in the pathway were eligible eleven completed the questionnaire (8 male) but only three patients (Male 50-56 years old; BMI> 31) consented to the rehabilitation course. Reasons for not participating were no transport, work commitments or full recovery achieved. Two patients had required MV and one NIV support. On completion of the rehabilitation course All three patient demonstrated a real (> 20%) improvement in 6MWT, mMRC dyspnoea score (1.0) and HADS. There was no change noted in oxygen saturation on exercise. All patients improved on the 1MSTS (68%, 11% and 41% respectively) (Table 1). Completion questionnaires carried out following the course indicated a high degree of subjective satisfaction from all patients.

	Patient A (Age 50) Male			Patient B (Age 55) Male			Patient C (Age 56) Male		
	Pre PR	**Post PR**	**Change**	**Pre PR**	**Post PR**	**Change**	**Pre PR**	**Post PR**	**Change**
6MWT	430m	490m	60m (14%)	340m	420m	80m (24%)	320m	410m	90m (28%)
1 Min STS	19 reps	32 reps	13 reps (68%)	18 reps	20 reps	2 reps (11%)	17 reps	24 reps	7 reps (41%)
BORG rest/exertion	0.5/2	0.5/2		0/5-7	0/2		0/1	0/0	
SpO2 rest/exertion	97%/97%	97%/98%		98%/94%	96%/96%		96%/94%	96%/92%	
mMRC	1	1	0	3	2	1	1	0	1
HADS	19	23	4	N/A	N/A		0	0	

Table 1. Results from Patient Assessment Forms [Link to form].

On completion of the programme, a post-assessment was completed where the six minute walk test and one minute sit to stand test were repeated and the BORG score and mMRC scores were repeated. Patients were also asked to complete a patient satisfaction survey anonymously. Patients demonstrated improvements on the 6MWT and 1 Min STS test.

Discussion

Covid-19 has affected more than 370,000 people on the island of Ireland with over 7,000 deaths. While a systemic disease it mainly affects the lung tissue causing diffuse alveolar damaged with organising micro-thrombi and organising pneumonia[6]. Significant problems can arise from the required treatments and many patients will also suffer from varying levels of de-conditioning. Further numbers of patients with less severe disease may suffer from post viral cough syndrome, dysfunctional breathing and other symptoms such as chronic fatigue, palpitations and asthenia[7]. For some it may be the initial presentation for undiagnosed pulmonary or other medical conditions. There is general recognition that many of these patients will requires support and rehabilitation going forward[8] In our small study we found a clinical improvement in all patients who underwent a structured rehabilitation program. Due to the increased numbers of acute cases during the year the program has only now being recommenced with the addition of an advanced respiratory nurse practitioner. This pathway allows for an initial contact with trained respiratory staff and allows for a personalised rehabilitation program. We found Face-to-face rehabilitation to be more effective. As the number of inpatients with acute Covid-19 declines resources are being directed towards those with ongoing symptoms. Our pathway allows for ongoing referrals to specialist medical and psychological support if required. An allied health respiratory team can provide a cost effective assessment and rehabilitation program for patients with post Covid-19 respiratory symptoms.

Declaration of Conflicts of Interest:
None of the authors have any conflicts of interest to declare.

Corresponding Author:
Catherine Elliott,
Dept. of Respiratory Medicine,
Cavan Hospital,
H12 Y7W1.
E-Mail: catherine.elliott@hse.ie

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