Reducing fatigue-related symptoms in Long COVID-19: a preliminary report of a lymphatic drainage intervention

1. Introduction:

During the first global wave of the COVID-19 pandemic, we reported on the potential for the emergence of a postviral syndrome following COVID-19 infection in a letter to the editor. This type of postviral illness was previously reported following severe acute respiratory syndrome (SARS) infection, also a coronavirus, when some patients, many of them healthcare workers, went on to develop a prolonged chronic fatigue syndrome/myalgic encephalomyelitis (CFS/ME)–like illness that nearly 20 months on prevented them from returning to work. This by its nature puts people at increased risk of weight gain and so of type 2 diabetes and, consequently, cardiovascular disease.

We have proposed that once an acute COVID-19 infection had been overcome, a subgroup of remitted patients were likely to experience long-term adverse effects resembling CFS/ME symptomatology such as persistent fatigue, diffuse myalgia, depressive symptoms, and nonrestorative sleep. This postCOVID syndrome now being termed 'Long COVID' is emerging as a global health issue. We previously pointed out that an early intervention applying management techniques used in patients with CFS/ME appears to help reduce the fatigue-related symptoms of Long COVID . An evidence-based hypothesis suggests that postCOVID-19 fatigue syndrome may result from damage to olfactory sensory neurons, causing an increased resistance to cerebrospinal fluid outflow and further leading to congestion of the glymphatic (glial lymphatic) system with subsequent toxic buildup within the central nervous system. This is supported by findings that SARS-CoV-2 can enter the nervous system by crossing the olfactory mucosa and that the spike protein of the virus crossed the blood–brain barrier in mouse studies . Our manual treatment appears to facilitate central lymphatic drainage, improve mechanics, and to reduce the inflammation of the cranium and spine, while also reducing allostatic load by improving the sympathetic tone. Halpin et al. reportedly established an integrated COVID-19 rehabilitation pathway that provides targeted intervention for people with Long COVID, based on their symptoms and needs. These authors classified Long COVID as 'postacute COVID' when the symptoms persisted beyond 3 weeks and 'chronic post-COVID syndrome' beyond 12 weeks after infection. It was suggested that these phases are complex multisystem syndromes requiring a multidisciplinary team to manage and treat the physical, cognitive, psychological, social, and vocational domains of this health condition. Investing in such specialist multidisciplinary rehabilitation services may help to reverse these symptoms before they become established. We have previously described a case study that pointed to success in treating a man with Long COVID/chronic post-COVID-19 fatigue

using a manual intervention for CFS/ME. This type of intervention has the potential to be applied more widely after thorough and comprehensive evaluation. Utilizing manual treatments, accredited UK osteopaths and physiotherapists among our practitioner network have reported treating patients with post-COVID illness and incorporating the routine recording of the profile of fatigue-related states (PFRS) as an outcome assessment measure within the clinical setting. Previously osteopathic treatment of chronic illness symptoms has shown positive findings in a variety of clinical contexts. Here, we present an analysis of a case series of the first 20 patients' data collected to evaluate the potential of one particular osteopathic intervention with Long-COVID patients.

2. Methods

Patients seen by a qualified Perrin Technique™ practitioner (osteopath or physiotherapist) were asked to complete the PFRS prior to entry (baseline) and again around 3 months after receiving a manual treatment protocol for fatigue-related to Long COVID. The diagnosis of Long COVID was made on the basis of a positive PCR test for COVID-19 and continuing fatigue manifest for more than 12 weeks after an acute COVID-19 infection. Based on clinical interviews, none of the patients in this clinical case study had any history of mental illness, significant physical health issues, or a prior diagnosis of CFS/ ME. All were new attendees to the clinic at the time of initial assessment. We asked practitioners to submit the patients' completed questionnaires as anonymized data to RP by the end of January 2021.

Intervention:
Treatment sessions with practitioners were completed once a week as described in Perrin , which involved effleurage of the neck/back/chest plus soft tissue stretching of paravertebral thoracic muscles, trapezii and levator scapulae, suboccipital musculature, and gentle cranial osteopathic techniques. Treated patients also followed a daily home-based self-massage routine of the head, neck, and chest combined with alternating warm and cool gel packs on the upper spine to encourage a reduction of spinal inflammation and further aid lymph drainage of the brain and spine. These homebased techniques included regular gentle mobility exercises involving rotational movement of the thoracic region to improve spinal mobility. The number of practitioner-based treatment sessions conducted was recorded prior to data extraction.
Outcome measure:
Six practitioners collected 20 sets of patient-recorded symptoms severity scores on the self-report 54-item PFRS , immediately before treatment and at 12 weeks or after the final treatment session if earlier. Responses were scored on a 7-point Likert-scale ranging from 0 (not at all) through 3 (moderately) to 6 (extremely). A higher score on the PFRS indicates a higher level of symptomatology summated over specific domains. The PFRS has four subscales: emotional distress, cognitive difficulty, fatigue, and somatic symptoms . Importantly, the PFRS measure covers symptom areas (such as difficulty in standing for long, slowness of thought, feeling anxious, feeling faint, limbs feeling heavy, and the slightest effort induces physical tiredness) that are core to the presentation of

Long COVID, apart from respiratory symptoms and loss of taste. The measure has shown high reliability, high internal consistency, and good convergence with comparison measures .

Data analysis:
The data were analyzed in Microsoft Office EXCEL 2016 and in Stata 14 (College Station, Texas, USA). We have not conducted inferential analyses, as the study is not formally powered. Therefore, we present descriptive data on the study sample and their responses on the PFRS questionnaire. Spearman's rank correlation was calculated as an indication of association between the number of treatment sessions and change in PFRS score. We have summarized the total PFRS score and its subscales (Tables 2 and 3). Table 2 shows data for patients who completed all items on the specified subscale and overall (i.e. there were no missing data). Where data were missing on an item, we 'imputed' the mean score by using the responses to other items on the subscale answered by the patient (as these are more likely to be correlated with each other than with responses from other patients) . If more than half of the items on a particular subscale were missing, the subscale score was considered to be missing. This only happened once (Table 3).