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SARS-CoV2 OMT: A Relative Contraindication to Thoracic Pump Technique and an Additional Indication for the Elderly

To the Editor:

I enjoyed the Special Communication "Buying Time: Using OMM to Potentially Reduce the Demand for Mechanical Ventilation in Patients with COVID-19"¹ and applaud Michael Stenta, OMS II, for authoring it. My concern, which may also be of concern to other neuromusculoskeletal medicine specialists,² is that the use of the thoracic pump technique in this population may be contraindicated. Gattioni et al³ recently reported that patients with severe acute respiratory syndrome coronavirus 2 (SARS-CoV2 or COVID-19) on mechanical ventilation seemed to have hyperperfusion of gasless tissue compared with typical patients with acute respiratory distress syndrome (ARDS), who have a loss of lung perfusion regulation and hypoxic vasoconstriction. The authors³ recommended that if a patient with SARS-CoV2 needs

continuous positive airway pressure therapy or noninvasive ventilation, intubation with a lower positive end-expiratory pressure (PEEP) should be considered. Interventions that result in high PEEP, they theorized, may be associated with tissue damage and poorer outcomes.

Studies^{4,5} have shown that resistive loading of the thoracic cage results in increased work of lung respiration. Increased intrapulmonary pressures may result because of the need to achieve appropriate oxygenation when pulmonary compliance is diminished or restricted. Thus, the thoracic pump technique, because of its intermittent resistive loading of the thoracic cage, may result in increased intrapulmonary pressures that could be damaging to the injured epithelial cell lining of the lungs in patients with SARS-CoV2. The respiratory epithelial cell death that is part of the natural course of this disease's reproductive cycle contributes to its uniqueness and is a source for concern.

Osteopathic manipulative treatment (OMT) is, however, indicated to treat somatic dysfunction in SARS-CoV2 patients since increased rib cage compli-

ance and motion should ultimately lower intrapulmonary pressure and the work of respiration. OMT may be particularly important for the elderly patients with SARS-CoV2, since they have an age-related decline in chest wall mobility.⁶ In a biomechanical model, this diminished chest wall mobility may be a contributing factor in the poorer outcomes seen in patients with SARS-CoV2 who are elderly. Consequently, this population may particularly benefit from the application of OMT due to its resultant increased chest wall compliance and mobility, which would, in Mr Stenta's words, "buy time."

Prone position ventilation has been used for patients with ARDS and SARS-CoV-2 to improve oxygenation and to reduce mortality rate.⁷ The improvement in gas exchange due to prone positioning occurs by enhancement of the intra-pleural pressure becoming less negative in non-dependent and less positive in dependent portions of the lung, which results in redistribution of the lung in a way that is favorable to optimal oxygenation.⁸ Positioning the patient prone just for OMT is probably not indicated, since the usual positioning for prone ventilation is 16 hours. As OMT may be performed with any patient positioning, this author recommends that OMT be used in any position that supports patient comfort and optimizes oxygen saturation. (doi:10.7556/jaoa.2020.093)

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