Correlation of Grip Strength with Biochemical Markers and Disease Status in COVID-19 Patients

Dsouza J.*, Nair S., Panhale V.

Mahatma Gandhi College of Physiotherapy, Navi Mumbai-400705, India

*Corresponding author

ABSTRACT

Background: The clinical records on individuals who have sustained an acute crisis of COVID-19, have reported early signs of musculoskeletal pathologies like diffuse muscle fibre atrophy which disrupts force transmission across the muscle. Cytokine storm triggers several oxidative and catabolic process in these individuals resulting in severalfold higher levels of Lactate dehydrogenase (LDH), Creatine Kinase (CK) and C-reactive protein (CRP) than healthy subjects demonstrating proteolysis and muscle wasting[3]. Handgrip strength (HGS) assessment has been used largely as an objective measure to evaluate and identify frailty in individuals with COVID -19 secondary to muscle damage[4]. The purpose of the present study was to determine if there exist a correlation of Handgrip strength assessment with laboratory biomarkers to interpret muscle fatiguability and functional status with regards to length of hospital stay and CORADS score in patients with COVID-19.

Methods: A cross sectional study using convenience sampling with 30 adult participants admitted in the tertiary care setup and diagnosed with COVID-19. Following written consent, demographic data and other investigations of participants during their hospitalizations such as requirement of oxygen support, laboratory biomarkers such as CRP, LDH, CK and CORADS score were obtained on admission. HGS was measured using a Jamar Hydraulic Hand Dynamometer using the guidelines recommended by American Society of Hand Therapists. The mean of three reading was taken from both hands.

Results: 16 males and 14 females with mean age 50±08 years were recruited. A significant positive correlation existed between HGS and hospital stay duration ($r_{h=}$0.3 at p=0.036), negative correlation between HGS and CORADS (r_h= -0.5 at p=0.013), negative correlation between CRP ($r_{h=}$ -0.4 at p=0.038), LDH ($r_{h=}$ -0.4 at p=0.052) and CK ($r_{h=}$ - 0.5 at p=0.01).

Conclusion: This study provides future scope for professionals to explore the relationship of musculoskeletal involvement and disease frailty to predict functional recovery in individuals with COVID-19.

Keywords: COVID-19, Hand dynamometer, Grip strength

ISBN: 978-81-954993-8-0; DOI: 10.21467/abstracts.130