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Measuring grip strength in COVID-19: A simple way to predict overall frailty/impairment

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Dear Editor,—Determining the risk factors for morbidity and mortality in ongoing Covid-19 pandemic as well as prompt diagnosis/treatment of relevant patients indisputably necessitate urgency. It is well-known that increased age and comorbidities - particularly hypertension - seem to be the strongest risk factors. In this sense, a simple and reliable predictor to stratify the risk of pertinent patients i.e. particularly elderly hypertensive patients vulnerable to sarcopenia and frailty - is absolutely required. Accordingly, in this clinical perspective, we would like to highlight the possible relationship between grip strength (one of the main determinants of sarcopenia and frailty) and Covid-19.

Grip strength is a simple but powerful predictor of future disability, morbidity, and mortality in not only elderly people but also in middle-aged and young people.¹ A longitudinal population study conducted in 17 countries reported that grip strength can predict all-cause mortality, specifically cardiovascular morbidity and mortality, even more than the systolic blood pressure.¹ Interestingly, in a prospective study comprising mechanically-ventilated patients, low grip strength significantly reflected re-intubation rate, and onehour post-extubation grip strength was significantly related to ventilator-free days.² Moreover, grip strength and other sarcopenia indicators (i.e. gait speed, skeletal muscle mass index) are inversely associated with the most common global measures of maximal strength of respiratory muscles (i.e. maximal inspiratory pressure (MIP) and maximal expiratory pressure (MEP)).³ Among pulmonary function tests; the maximum value of vital capacity ($r=0.72$), forced expiratory volume in 3s ($r=0.70$), and forced vital capacity ($r=0.69$) were found to be strongly correlated with grip strength (all $p<0.001$). Both pulmonary function and grip strength were correlated inversely with age, and better pulmonary function was associated with greater grip strength.⁴ Similarly, in community-dwelling elderly, the increase by 1 cmH₂O in MIP and MEP decreased the

probability of decreasing muscle strength (2-3%), grip strength (3-4%), and skeletal muscle mass index (3%).³

In closing, measuring the grip strength as another “vital sign” can provide information about frailty including physical (i.e. sarcopenia), cognitive and pulmonary impairments. Being non-invasive, simple, and inexpensive; measurement of the grip strength in Covid-19 patients especially with high-risks (e.g. hypertensive elderly) would for sure be noteworthy. Yet, this may provide an overall idea as regards the general health status particularly the respiratory muscle strength, lung capacity, and can also be predictive for increased morbidity/mortality and treatment response. In short, patients with low grip strength can be considered to be under increased risk who might require strict strategies and close follow-up.

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Declaration of Competing Interests

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