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The coronavirus disease (COVID-19) - A supportive approach with selected micronutrients

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Abstract

Worldwide the pandemic of COVID-19 spreads rapidly and has had an enormous public health impact with substantial morbidity and mortality especially in high-risk groups, such as older people and patients with comorbidities like diabetes, dementia or cancer. In the absence of a vaccine against COVID-19 there is an urgent need to find supportive therapies that can stabilize the immune system

and can help to deal with the infection, especially for vulnerable groups such as the elderly. This is especially relevant for our geriatric institutions and nursing homes. A major potential contributing factor for elderly is due to their high incidence of malnutrition: up to 80% among the hospitalized elderly. Malnutrition results when adequate macronutrients and micronutrients are lacking in the diet. Often missing in public health discussions around preventing and treating COVID-19 patients are nutritional strategies to support optimal function of their immune system. This is surprising, given the importance that nutrients play a significant role for immune function. Several micronutrients, such as vitamin D, retinol, vitamin C, selenium and zinc are of special importance supporting both the adaptive and innate immune systems. As suboptimal status or deficiencies in these immune-relevant micronutrients impair immune function and reduces the resistance to infections, micronutrient deficiencies should therefore be corrected as soon as possible, especially in the elderly and other vulnerable groups. According to epidemiological, experimental and observational studies, some case reports and a few intervention studies the supplementation of vitamin D and/or zinc are promising. The multiple anti-inflammatory and immunomodulatory effects of Vitamin D could explain its protective role against immune hyper reaction and cytokine storm in patients with severe COVID-19. A randomized, placebo-controlled intervention study even shows that high dose vitamin D supplementation promotes viral clearance in asymptomatic and mildly symptomatic SARS-CoV-2 positive individuals. Besides, the data of a recent prospective study with COVID-19 patients reveal that a significant number of them were zinc deficient. The zinc deficient patients had more complications and the deficiency was associated with a prolonged hospital stay and increased mortality. Thus, immune-relevant micronutrients may help to increase the physiological resilience against COVID-19.

Keywords: COVID-19; elderly; malnutrition; retinol; selenium; vitamin C; vitamin D; zinc.

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