



REVIEW ARTICLE

Elderly Involvement in the Era of COVID-19 Infection

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Abstract

Nowadays, the entire world is facing the outbreak pandemic of COVID-19 infection which is a lethal infection to some extent. The most commonly affected group of population is the elderly due to impaired immunity and multiple co-morbidities they suffer from. From this point of view; we will discuss some important issues about the elderly involvement during COVID-19 pandemic hoping to raise the awareness toward that frail sector of population. Indeed many researches for COVID infection whether regarding outcomes, predictive diagnostics, and management strategies including optimal approach in older people is largely needed.

Keywords

Elderly, COVID-19

Introduction

In December 2019 outbreak of novel coronavirus infection (COVID-19) started in Wuhan, China rapidly spreading to involve most of the countries worldwide with high mortality rate [1]. COVID-19 is a coronavirus infection, that caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) which share some similarity with other viral infections as in Severe Acute Respiratory Syndrome (SARS in 2003) caused by SARS-COV-2, Middle Eastern Respiratory Syndrome (MERS in 2013) caused by MERS-CoV and human coronavirus-EMC. Both innate and adaptive immunity are involved in COVID-19 infection [2].

The elderly is most susceptible to infection than the general population with a higher risk for increased mortality rate. These may be due to primary or secondary structural and functional changes of bone marrow, thymus, lymphoid organs, and immune cells associated with aging [3].

Indeed to the physiological changes associated with aging, the elderly become of low capability to fight infection with increasing the risk of autoimmunity, and constitutive low-grade inflammation [3].

Beside the physiological changes occurring with aging, it was reported that the older man is prone to infectious diseases more than an older woman with high pro-inflammatory immune responses and low adaptive immune responses [4,5].

In a lot of studies about aging, there was a link founded between age, diet, nutrients, and immunity in the elderly [6]; the clinical or subclinical micronutrient deficiency is common in older adults; conforming to this fact they may have a role in many age related diseases and decreased immune functions [7,8].

Elderly Affection in COVID-19 Pandemic

Owing to impaired immunity and multiple co morbidities that the elderly people suffer; as respiratory diseases, cardiovascular disease and diabetes mellitus so they present the most vulnerable group of people susceptible to severe COVID-19 infection with a higher mortality rate in the clinical settings [9-11].

As reported in the early statistical analysis of data in China, patients aged 60-years-old represent higher case-fatality rate (CRF); they represent 81% of the total deaths from COVID-19 confirmed cases [12]. In a study of 1099 patients with COVID-19 infection in China, they found that patients aged 60-years-old and above represented 15.1%, 27% of them suffered from severe illness [13]. Although in another study analyzing 4021 COVID-19 confirmed cases, patients aged 60-years-old or more represented 26.2% of total number of cases

with higher rate of mortality which was 5.3% in comparison to 1.4% for younger age patients [14].

Several reports during COVID-19 outbreaks in china showed that older age can be a predictor of severity and mortality during COVID-19 infections [15]. Upon a retrospective analysis of data from China and elsewhere they concluded that there is a powerful correlation between age gradient, infection fatality ratio (IFR) and case fatality ratio (CFR) [16]. In March 2020, elderly was the most common affected sector in French with high rate of mortality, they accounted for 20% of the confirmed cases and 79% of the total deaths [17].

Clinical Features of COVID-19 Infection in Elderly

Fortunately the majority of COVID-19 cases are mild with small number of cases require hospitalization and oxygen support (around 14%), and 5% only require admission to an intensive care unit [18].

In severe cases of COVID-19; acute respiratory distress syndrome (ARDS), sepsis and septic shock, multi-organ failure are the main causes of mortality [19].

As the elderly people usually present with atypical clinical presentations so there will be a great challenge for their diagnosis and management with great incidence of delayed diagnosis or misinterpretation especially in cases of cognitive impairment together with higher risk for spreading infection during COVID-19 outbreaks and high mortality rate [20]. In many studies upon analysis of clinical characteristics of COVID-19 infection in elderly, it was found that the most obvious symptoms at admission were fever, cough, dyspnea and fatigue which are consistent also with any viral infection. Obviously, dyspnea was the most frequently acquired symptom in dead patients [21].

Outcome of COVID-19 infection in Elderly

Out of 339 COVID-19 infected patients aged 60-years-old or more, over 70% were found suffering from severe infection, higher rate of progression and high case fatality rate (19%). There were several risk factors associated with poor outcomes in elderly which was a symptom as dyspnea, presence of multiple comorbidities as cardiovascular disease and chronic obstructive pulmonary disease (COPD), or complications as acute respiratory distress syndrome (ARDS). Unfortunately very few numbers of elderly patients that were mechanically ventilated with ARDS survive, therefore with occurrence of ARDS, the incidence of mortality increases dramatically; and so we can suggest ARDS as a predictor for poor outcome [22].

Upon a retrospective analysis study of 82 COVID-19 deaths in Wuhan, China; more than half of dead patients were older than 60 years represented 80.5% of total deaths with median age 72.5 years. Rate of deaths were more in male (65.9%). The majority of dead patients had

comorbidity (76.8%), as hypertension in 56.1%, heart disease in 20.7%, diabetes in 18.3%, cerebrovascular disease in 12.2%, and cancer in 7.3% [23].

Because the high prevalence of malnutrition in elderly and its impact on immune status therefore the nutritional assessment and proper management should be essential to determine the risk of infection, the illness course, and the outcome of COVID-19 in older adults [24].

Prevention of COVID-19 Infection in Elderly

Elderly have the same rights as general population to receive high-quality health care, including intensive care. In older people with probable or suspected COVID-19 it is essential to provide person-centered assessment including understanding the person's life, values, priorities, and preferences for health management. It is essential to ensure multidisciplinary collaboration among physicians, nurses, pharmacists, and other health care professionals to address multimorbidity and functional decline together with caregivers and family members in decision-making and goal-setting throughout the management of older COVID-19 patients [25].

As regarding to protection of elderly people during COVID-19 outbreak, strict instructions should be taken including strict infection control measures, self-quarantine that was established in many countries, it is also important to maintain healthy lifestyle with good nutrition, physical activity and stopping tobacco and alcohol; however this social isolation and loneliness have a bad impact on elderly people with increasing the incidence of cognitive disorders which may lead to further delay in the diagnosis so there must be a good way for better communication between the family, caregivers and medical staff [26]. In attempt for caring of elderly people, the Association for Geriatric Palliative Medicine (FGPG) established a palliative care approach in both in-patient setting and at home [20].

The macro-, micronutrients, and phytonutrients in diet provide a good method for promotion of immune system especially the antioxidants and the anti-inflammatory nutrients that are present in many compounds such as beta-carotene, vitamin C, vitamin E, and polyphenolic compounds [27,28]. Also the nutritional status of elderly affects the risk of SARS-CoV-II infection, the clinical course, and the outcomes of COVID-19. And so, the maintenance of host macro- and micronutrient status either by foods, nutrients, or medicines could be an important preventive measure for COVID-19 [29-31].

It is essential to avoid the inappropriate medication prescriptions in patients treated for COVID-19 in order to prevent the undesirable adverse drug events and drug interactions [24].

Conclusion

In conclusion; owing to vulnerability and multiple co

morbidities in elderly people, they are the most commonly affected sector with COVID-19 infection with high risk of progression to severe infection and higher rate of mortality, so strict measurements should be taken for protection, close monitoring, early treatment which could be a mean to improve the outcome in the affected elderly patients. Nutritional assessment and management should be an integrated part in prevention of COVID-19 infection in elderly. We are still in great need of more studies to clarify the natural history of disease with serial biological sampling especially in elderly. Currently many researches for COVID infection whether regarding outcomes, predictive diagnostics, and management strategies including optimal approach in older people is largely needed.

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Declaration of Interest

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