

Health care of the elderly during Covid-19 pandemic— All a family physician should know

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ABSTRACT

Elderly people account for more than 9% of the global population, and more than 6% of the Indian population. Covid-19 has badly affected the older population, identification of risk factors for severe disease and early intervention results in reduced mortality. Older adults may have a varied spectrum of presentation which ranges from mild to severe disease. Milder diseases are more in older adults without prior comorbidities whereas severity increases with increase in number of illness. Till date there is no definitive treatment and vaccines are also at different stages of trial only preventive methods and early detection of cases are important tools for fighting this pandemic. Dedicated centre's for elder care as well as trained geriatricians are very few in India. Prevention should be the most important strategy for older adults. Follow social distancing and maintain a distance of 1 meter from others even if you are healthy. Wash hands repeatedly with soap and water or use hand sanitizer and generous use of masks. Older adults should be encouraged to take their regular medication and the baseline disease should be under controlled. Frequent teleconsultation from the primary physician should be done repeatedly to identify the symptoms and also control of baseline disease. Considering Covid-19 increased mortality and severity in the older population we are providing practical suggestions for family physicians while managing elderly Covid patients.

Keywords: Covid-19, multimorbidity, older adults

Introduction

Elderly people account for more than 9% of the global population, and more than 6% of the Indian population. WHO has reported 22.8% of Covid-19 infections were seen in older adults aged more than 65 years. CDC has reported that if we consider death due to Covid-19 eight out of ten deaths were seen in people aged more than 65 years in the United States. Case fatality and hospital admission rate was also found to be on the higher side as the number of comorbidities increases. This rapidly spreading pandemic has affected more than 68

million individuals and resulted in 1.5 million casualties across the globe.

Till date there is no definitive treatment and vaccines are also at different stage of trial. Only preventive methods and early detection of cases are important tool for fighting this pandemic. However some vaccines are approved for emergency use considering the pandemic is not being controlled and resulted in millions of lives lost. Dedicated centers for elder care as well as trained geriatricians are very few in India and Covid-19 has badly affected the older population. Considering Covid-19 increased mortality and severity in the older population we are providing practical suggestions for primary care physicians while managing elderly Covid patients.

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COVID19 among elderly: Clinical features

Older adults may have a varied spectrum of presentation which ranges from mild to severe disease. Milder diseases are more in older adults without prior comorbidities. They can present with classical symptoms of fever, malaise, fatigue and dry cough.^[1]

However, they can present with atypical symptoms which are more common in older adults and may present with delirium, unexplained hypoxia, tachycardia, tachypnoea, sore throat. Other symptoms include anosmia, diarrhea, vomiting, nausea, chills, headache and sputum production. Presence of ACE 2 receptors on multiple tissues like non keratinizing epithelium of basal layer of oropharynx, alveolar walls, enterocytes, endothelial cells, smooth muscles, heart and PCT of kidneys. Epithelial layers of nasopharynx have less expression of ACE2 receptor and thus individuals suffering from Covid-19 have limited upper respiratory symptoms. ACE2 receptors are in abundance on lungs and intestinal epithelium making them more susceptible to be involved and hence the classical clinical presentation.^[2] A study conducted in India shows that obesity prevalence is higher in individuals suffering from Covid-19.^[3] As the age advances due to immunosenescence and pre-existing diseases the severity of Covid-19 increases. Older individuals in 7th and 8th decade of their life have a case fatality rate of 8 percent and it increases to further 14.8 percent in the ninth decade of life.^[4] Chronic illness like diabetes, hypertension, chronic kidney disease, lung involvement in interstitial lung disease (ILD), bronchial asthma, chronic obstructive airway disease, immunocompromised state, organ transplant and cardiovascular diseases are associated with more severe disease. Male sex and obesity are also associated with severe disease.

Imaging studies include chest x-ray and CT chest. Characteristic pattern seen in COVID-19 are bilateral, peripheral, multi-lobar involvement with ground glass opacity. Other findings include subpleural, pleural thickening, bronchiectasis and interlobular septal thickening may be seen. Although it can be rarely associated with enlargement of lymph nodes, cavitory lesion, pleural or pericardial effusion and pneumothorax.^[5]

Increased value of C reactive protein (CRP), ferritin, erythrocyte sedimentation rate (ESR), IL6, d-dimer, prothrombin time and LDH along with decrease in lymphocyte count, eosinophil and albumin level are the common laboratory findings.^[6] SARS-CoV-2 infection have been found to be associated with higher level chemokines and cytokines which include mainly interleukins particularly IL1- β , IL1RA, IL7, IL8, IL9, IL10, interferon (IFN γ) TNF α , and VEGFA.^[7]

COVID-19 among elderly: Course and prognosis

CDC reported hospitalisation rate increases with increase in age and it has been 5 times more in the 65-74 age group as compared to people of age 18-29 years and it rises further to

13 times in 85 years and older. Increased LDH, CRP, d-dimer and lymphopenia are found to be associated with more severe disease and have poor prognosis.^[8]

Critically ill individuals develop complications like acute respiratory distress syndrome (ARDS) require prolonged ventilatory support and increased hospital stay, cardiac injury, arrhythmias, shock and finally death. CDC reported mortality rate increases with increase in age and it was 90 times more in the 65-74 age group as compared to people of age 18-29 years and it rises further to 630 times more in 85 years and older.

Increase in the number of comorbidities are associated with increased mortality in older individuals and has been reported by CDC. Risk of hospitalisation is 4.5 times higher if patients have 2 or more comorbidities. Frailty and even cognitive impairment have been found to be associated with more severe disease and poor outcome of Covid-19 in older adults.^[9]

Mechanism of the High burden

Aging changes and accumulation of lifestyle disease in older adults like diabetes hypertension and obesity resulted in poor outcome in Covid-19. Reduction in vital capacity, FEV1 and DLCO with aging^[10] resulted in decline in lung function which might have led to rapid progression of disease in older adults. Patients on mechanical ventilation have seen that there is upregulation of ACE 2 and increased expression in AT2 cells as compared to non-ventilated individuals. Also, in the same study it has been seen that there is an increased expression of ACE 2 receptors in those individuals on ACE inhibitors or ARB.^[11] This might be a reason why there is increased severity of Covid-19 in elderly as well as poor prognosis as compared to younger counterparts. Previous infection with coronaviruses with reduced capacity to neutralise SARS-CoV-2 can also make elderly vulnerable to contract COVID-19 infection.^[12]

Management of Covid-19

The main focus in management is to early diagnosis of the infection, isolation of the diagnosed case, early identification of severe symptoms and complication. Multiple tests are available for diagnosis of Covid-19 which include rapid tests for antigen detection and Nucleic acid amplification tests like RT PCR.^[13] For the diagnosis of Covid-19, RT PCR is considered a gold standard test. Oropharyngeal or nasopharyngeal swab and bronchoalveolar lavage is used for taking samples though BAL is not preferred as it is an invasive procedure and also there is increased risk of aerosol generation. Serological test has also been developed to detect antibodies against SARS-CoV-2 which signifies either the patient has previous exposure or has current infection of more than 3 week duration.^[14]

Milder disease should be managed on home-based care and it includes patients with no previous comorbidities and having no breathing difficulty and maintaining oxygen saturation at room

air. For home based care we should assess whether isolation can be maintained at home and they should be taught to identify warning signs of deterioration of symptoms.^[15] whereas patients having moderate to severe disease and having multiple comorbidities should be admitted as older patients have rapid deterioration and may progress to ARDS. Moderate disease includes signs like respiratory rate more than 24 per minute, heart rate more than 110 beat per minute, systolic blood pressure of 110 mm of Hg and oxygen saturation less than 95% at room air. Oxygen saturation of less than 90% at room air, hypotension on inotropic support and progression to ARDS and myocarditis are seen in severe disease.^[16]

For management of fever, myalgia and headache acetaminophen is preferred if not responded to than NSAIDs can be considered. For mild dyspnoea and cough patients can be asked for prone position and respiratory exercise to be considered. For persistent cough dextromethorphan or benzonatate (100 to 200 mg orally 3 times a day) can be given.

Symptoms of Covid-19 can be seen in other common respiratory illnesses like influenza, bronchial asthma, pneumonia, COPD and anxiety so it should also be considered while making a diagnosis and it should be ruled out.^[17]

Covid-19 patients having moderate to severe symptoms should be admitted in hospitals and should be cautiously managed and should be watchful for development of ARDS and myocarditis. These patients should be started on prophylaxis of venous thromboembolism.^[18] Inhaled metered dose inhaler should be preferred over nebulisation to prevent aerosol generation.

Dexamethasone is a preferred immunomodulatory drug for patients who require oxygen and it is to be administered at 6 mg per day for 10 days or until hospitalisation whichever is earlier. If dexamethasone is not available other steroids (hydrocortisone, prednisone, methylprednisolone) can be administered.^[19] Remdesivir have been recommended for severe infection and is used at 200 mg IV on 1st day followed by 100 mg daily for next 4 days total duration is five days but can be extended to 10 days in patient on mechanical ventilation, ECMO and those who did not responded till 5 days of remdesivir. It is not recommended to use along with chloroquine or hydroxychloroquine and in patients with raised aspartate transaminase 5 times the normal limit.^[20,21]

Convalescent plasma which can provide passive immunity obtained from covid-19 recovered patients can be used in treatment of patients in the early course of disease.^[22] Tocilizumab (IL6 inhibitors) can be used cautiously in patients with raised inflammatory markers and proinflammatory cytokines in severe patients, it have been seen to be associated with increased risk of secondary infections.^[23,24] Hydroxychloroquine emergency use has been revoked by FDA for management of severe Covid-19 patients. Though due to its antiviral properties and some observational studies showing its benefit it's still used

at a dose of 400 mg twice a day on the first day followed by 200 mg (bd) for the next 4 days.^[25] HCQ has been seen to be associated with QTc prolongation so it should be cautiously used in older people and also ECG should be considered before initiation of treatment.^[26] Favipiravir a RNA polymerase inhibitor is used for mild covid-19 patients though study is going on to support its use.^[27]

Lopinavir-ritonavir has been found to have *in vitro* activity against MERS-CoV in animal studies and studies are undergoing to see its effect on Covid-19 infections. Ivermectin has also been suggested for its use in Covid-19 infection on the basis of its effect on SARS-CoV *in vitro* although studies are going on to see its effect on *in vivo* Covid-19 infection.^[28] Other drugs which are also proposed for its use in Covid-19 treatment are colchicine, famotidine and sofosbuvir plus daclatasvir. Clinical trials are undergoing in support of these drugs.

Recovery from mild disease may take 2-week times or severe disease may take 4 to 6 weeks or longer depending upon premorbid state.^[29] Severe disease takes longer time to recover. It has also been seen that some symptoms particularly dyspnoea and fatigue persists even after recovery.^[30] Pulmonary rehabilitation should be started from day first of getting Covid-19 symptoms. Six-week respiratory rehabilitation program has been seen to improve the respiratory function as well as quality of life and reduce anxiety of older adults.^[31]

COVID19 among elderly: Sequelae, Long-term prognosis

Though a little is known about the long term sequelae of Covid-19 infection. Presence of ACE2 receptors and involvement of tissues and organs results in varied complications like myocarditis, vasculitis and ARDS. Raised cytokines and acute phase reactants in individuals with hyper immune response usually have a severe disease in one week after the onset of disease and have a grave prognosis.

Covid-19 in elderly population have been found to be associated with decreased quality of life, physical, mental function along with impaired activities of daily living. Apraxia syndrome and recurrent pulmonary infection can be the results of reduced exercises and respiratory disorders.

Older adults who have recovered from infections and discharged having improved respiratory function are essential to maintain activities of daily living and a good quality of life.

Lockdown has resulted in a great impact on the social life of elderly leading to isolation and loneliness and confinement of themselves in the home. Financial dependence and dependence to caregivers lead to mental health problems and increased violence on older adults.^[32] Aerobic exercise and yoga can be advised to reduce the stress and also to maintain bone health as reduced activity has a detrimental effect on bone health.

Advice for older people during Covid-19 pandemic

Prevention should be the most important strategy for older adults. Follow social distancing and maintain a distance of 1 meter from others even if you are healthy. Avoid social gatherings and public activities but should participate in video or telephonic communication frequently to avoid loneliness. Wash hands repeatedly with soap and water or use hand sanitizer and generous use of masks. Always sneeze on flexed elbows or use a disposable tissue paper. Clean and disinfect repeated used or touched surfaces. Older adults should be encouraged to take their regular medication and the baseline disease should be under controlled.

Practical challenges while dealing with Covid-19 pandemic

Lifestyle in India which is a joint family system and living in small houses are one of the problems while following norms of social distancing. Social isolation, social distancing, social disconnectedness, and loneliness are found to be associated with depression, so there is increased risk of having mental health issues in elderly during Covid-19 pandemic. A study conducted in India reported that about 50% of people practice social distancing at public and work places where as only 45% of people practice handwashing for at least 20 seconds.^[33] Rapid deterioration of patient and atypical presentation at the beginning makes it difficult to diagnose in early stages resulting in adverse outcomes. Presence of multimorbidity and immunosenescence also affect the outcome of Covid-19 in older adults. Age related decline in pulmonary, hepatic and kidney function should be considered while administering the drugs in older adults. Polypharmacy has been seen to be associated with drug interaction and had an adverse outcome in older adults judicious use of drugs while treating Covid-19 patients should be considered. Frail elderly should be identified at the time of presentation and should be monitored for warning signs and symptoms of Covid as mortality is very high in them. Older adults with advanced dementia should be admitted as they are not able to identify warning symptoms. Older adults living in old age homes are more vulnerable to contract infections so visitors should be restricted and regular monitoring of caregivers for symptoms of Covid-19. Frequent teleconsultation from the primary physician should be done repeatedly to identify the symptoms and also control of baseline disease. A number of questionnaire-based survey have been conducted in India to look after the effect of Covid on lifestyle and behaviour changes.^[34-36] Studies have found changes in the psychosocial functioning of different population groups.^[37] It has been seen that among health care workers resident doctors have lower risk of acquiring Covid-19 infection and practising social distancing, ensuring proper N-95 facemask fitting check and a good hand hygiene are the best method of protection and it should be taught to other health care workers by family physician.^[38]

Key points

- Frail elderly should be identified at the time of presentation and should be monitored for warning signs and symptoms of Covid-19 as mortality is very high in them
- Polypharmacy has been seen to be associated with drug interaction and had an adverse outcome in older adults judicious use of drugs while treating Covid-19 patients should be considered
- Frequent teleconsultation from the primary physician should be done repeatedly to identify the symptoms and also control of baseline disease
- Family physician should teach other health care workers to insure social distancing, good hand hygiene and proper facemask fitting check.

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Conflicts of interest

There are no conflicts of interest.

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