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The Immune Aging in Elderly and the Potential Impact on the Immune Response against SARS-Cov-2 in Covid -19 Patients

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ABSTRACT

Coronavirus disease (COVID-19) is an infectious disease caused by a new strain of coronavirus. While most people infected with COVID-19 will have mild to moderate respiratory illness and recover without needing special treatment, the elderly are more likely to develop serious illness. With the ongoing mutation of the emerging coronavirus and the growing list of its symptoms, it is becoming increasingly necessary to remain vigilant about the signs of COVID-19. COVID-19 symptoms are different in the elderly compared to others. Some of these symptoms may be missing in the elderly and the aging of the immune system may play a role in your guide. The aim of this descriptive minireview, generally, is to shed light on The immune aging in elderly and the potential impact on the immune response against SARS-CoV-2 in Covid -19 patients.

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INTRODUCTION

The elderly are classified as “very vulnerable” among the various other age groups in societies, because they are most vulnerable to chronic diseases and their complications, to deteriorating functional ability, and disability. When the elderly are infected with the emerging coronavirus, they are more likely to die compared to those under the age of forty, according to health data. This seems understandable or self-evident, from a health point of view, because the elderly constitute the largest proportion of people with diseases such as diabetes, blood pressure and lung disorders. But some scientists point out to another health factor that increases the susceptibility of the elderly person to complications when infected with infection, which is the aging of the human immune system. Because the cells of the human immune system undergo a great change with the passage of decades, becoming a great degree of complexity.

Because of these changes, the immune system of the elderly person responds disproportionately, either it overreacts to infection, leading to a large number of infections, or it is too late to react to the danger to the body such as the entry of the virus, and then, the road becomes clear to the disease.

Researchers who study the aging of the immune system say that understanding these changes will not only help to understand the impact of age, but will also help to develop better policies in the field of vaccines and drugs for “Covid 19” disease in the future.

According to numerous studies, everyone is equally susceptible to infection with Covid, but the risk of complications is higher among the elderly and people with weakened immunity. Over 65 years old, which makes it easy to miss.

As we all know that high fever is the early symptom of coronavirus, but people over 65 years of age have a low temperature, which simply means they have a fever at a low temperature. This can easily be missed or confused with a common fever.

According to studies, the normal body temperature of any individual remains somewhere between 37°C to 37.2°C, when the temperature rises to (38°C) it is considered a fever, however, a study from King's College London indicates that the normal body temperature For an individual what constitutes a fever may vary by age.

The researchers participating in the study stated that “aging affects the temperature in health and acute infection,” and

based on the results of this study, the team of researchers concluded that 37.2 degrees is equivalent to 38 degrees in the case of people over 65 and can be a sign of infection with corona.

Low-grade fever and increased risk of Covid -19

High temperature is one of the main symptoms of the Corona virus, and fever usually occurs when the body temperature reaches 37.8 degrees Celsius or higher, and in infants and children the normal temperature is about 36.4 degrees Celsius, but this can vary slightly among children. Data show that about 55 percent of people infected with COVID-19 have a fever in the early days. This can be missed in the case of the elderly because the current temperature is very high. There are high chances that people over 65 will not reach the 38-degree mark. It will delay the detection of infection caused by the Corona virus and obtaining appropriate treatment in time, which could put their lives at risk. In the case of the elderly, it is important to be very careful, even the slightest change in body temperature or health should not be taken lightly.

Delirium can be an early sign of COVID in the elderly

In the case of the elderly, you should look for signs of delirium, which is suggested to be an early warning sign of COVID-19 infection in the elderly, according to a different study, delirium was the only symptom in many older patients who tested positive for the virus.

Delirium is referred to as a state of confusion, inattention, and other cognitive alteration. The results of this study indicate that patients who have been hospitalized with COVID-19, especially those who require ventilators, are known to be prone to delirium, which may be Due to the isolation imposed to limit the spread of the coronavirus.

Immunity, age and covid 19

In order to understand what is happening from an immune point of view, it must be noted that when a virus can penetrate the human body, cells are in the front lines to confront it, either slightly or strongly. Not only do the first cells do this role, but they also notify other cells so that they are ready to fight the "external invasive enemy", and when this response occurs, inflammation occurs in order to overcome the infection. At this moment, what is known as the "innate and non-specialized immune system" contributes to responding to infection, by eliminating damaged cells and proteins that cannot perform their tasks, and this task continues even when the body is free of the virus.

In the case of elderly people, the immune system becomes unable to get rid of this "waste" because its size increases significantly, according to what explains the researcher specializing in immunology. Furthermore, when a person ages, the so-called "unspecialized innate immune system" becomes in a continuous state of alert and inflammation against external infection, and this response is not beneficial to health. In addition, aging cells in the body's tissues secrete inflammatory substances on their own, and the reason is that they experience a great change with age this is the modulation of the immune entity induced by aging.

For this reason, a person over 65 years of age often has a higher level of immune system proteins such as "cytokines" that are responsible for inflammation. These proteins related to the immune system are found more in the elderly than in the young, and this factor increases health disorders in this group. These transformations confuse the messages that the immune system sends to respond to the disease, which leads to a failure to reach the desired target.

Immunity aging in elderly and Vaccination

Perhaps because of these immune disorders, the elderly get infected with corona despite the two doses of the vaccine. Researchers have found an explanation for why the Corona outbreak continues in nursing homes, despite the elderly receiving full two-dose vaccinations.

In two studies published in the journal Emerging Infectious Diseases, researchers show that the immune system of older adults reacts less efficiently to vaccination than younger adults.

In one of the two studies, experts focused on the outbreak of the virus in a nursing home in Berlin last February, in which 11 members of the nursing staff - who did not receive a full vaccination - and about 20 residents of the home were infected with the Corona variant (B117). . With the exception of four of them, all received a full vaccination of the Pfizer-Biontech vaccine.

Serious symptoms in unvaccinated people

The four who were not vaccinated developed severe symptoms of the disease, which required hospitalization. Only about a third of those vaccinated had symptoms such as coughing or shortness of breath. According to the Charité Hospital, two vaccinated residents of the house died, but perhaps not from infection with corona, as stated in the hospital's statement.

It is from this outbreak that vaccination provided protection for the residents of the nursing home in general, because the symptoms of the disease were noticeably mild, but the increase in infections made it clear at the same time that the vaccine is sometimes not fully effective in the elderly.

In the second study, the research team compared the immune response to the Pfizer-Biontech vaccine in patients over the age of 70 in a GP practice staffed by Charité staff, with an average age of 34.

Blood analyzes showed that only three weeks after the first dose, about 87% of the younger people had developed antibodies against the Corona virus, while the percentage among the elderly was only about 31%. One month after the second dose, almost all vaccinated young people had (99%) of the antibodies in their blood, while this percentage in the elderly reached 91%.

Antibodies mature more slowly in the elderly

In addition, the antibodies matured more slowly in the elderly, meaning that the antibodies were less able to bind to the virus. The second important arm of the immune response, the T-cell response, was also weaker. "Our study shows that the immune response in the elderly is significantly delayed after vaccination and does not reach the level of the young vaccinated," said Eric Zander, a vaccine researcher from the Charité University Hospital.

In a related context, the Permanent Committee for Immunizations in Germany announced that it assumes that some people do not have effective immunity against the emerging corona virus, despite receiving full doses of the vaccine.

There are two explanations that there are currently a large number of studies that show that vaccination against the emerging corona virus in some people, whose immune system weakens while receiving drugs, is not as effective as the case for others, and that the immune response is bad, and may not occur at all.

CONCLUSION

The elderly, who are usually weak in structure and suffer from most chronic diseases of the age, have low immunity and rapid and severe infection with diseases, the Covid-19 pandemic has caused many risks for this group of elderly people. The results of several studies indicated that 75% of coronavirus-related deaths in aged care facilities worldwide are due to elderly people. This necessitates rethinking the relationship of the elderly to such emergency epidemics and examining the impact of the Corona pandemic on them in particular.

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