



Short communication

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The Probable Reason Behind the Low Mortality Rate in Females Than Males in Covid-19



Sukanta Bala*

Department of Biotechnology & Genetic Engineering, Bangabandhu Sheikh Mujibur Rahman Science & Technology University, Bangladesh

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*Corresponding author: Sukanta Bala, Department of Biotechnology & Genetic Engineering, Bangabandhu Sheikh Mujibur Rahman Science & Technology University, Bangladesh

Abstract

Biologically male and female are not the same in various criteria. But we can't say that males are ultimately superior to females. After studying some scientific papers it has been cleared that though males and females have the same number of ACE2 receptors in their lungs at an early age it may decrease overage. But the decreasing rate is high in males. This can be the reason why more males are dying from Covid-19 which binds to ACE2 receptors. A lower number of ACE2 is linked to more severe inflammation. So this can be the probable reason behind the incident.

Keywords: ACE2; Covid-19; Inflammation; Immune system

Introduction

We know about the fact that death percentage in males is much higher than the female in Covid-19 [1]. But what is the reason behind this incident?

For finding this answer we must understand some fundamentals topics like

1. Coronavirus binding site and replication process
2. Why the death occurs

ACE2(Angiotensin-converting enzyme 2)

Covid-19 binds to a specific cell receptor named ACE2. This receptor is found many cell surfaces especially in the oral and nasal mucosa, lung, nasopharynx, skin, stomach, small intestine, colon, thymus, lymph nodes, spleen, bone marrow, kidney, liver, and brain [2]. So, the virus can replicate in these organs. Viruses enter into the cell by binding to the ACE2 receptors and the uses cell mechanism for replication.

Age

Age is a determining factor in the mortality rate and there is a significant difference between males and females. is there any difference in the ACE2 number in older people? An experiment was set to find the difference in rats because directly finding from

humans arose ethical questions. It was found that ACE2 receptors reduced in numbers as the age increases in rat. But the rate is different on gender. In males, the reduction rate was higher than the reducing rates in females. In young adults and middle-aged, there was no significant change in the number of receptors in the lungs [3]. Now we may say that there is a difference in the number of ACE2 in older people and it varies between gender. If this also happens to humans. There is a chance to see the same in humans.

Inflammation

So, how the low number of ACE2 cause death? Evidence suggests that inflammatory cytokines and chemokines were significantly high in severe cases of Covid-19 patients than the mild cases. Interleukin-6 was a common chemical that initiates cytokine storms. Tissue necrosis, infiltration in lungs, and interstitial macrophages in the heart, lungs, and mucosas of the gastrointestinal was most common in the patients of Covid-19 [4].

Result

Results from some clinical data also indicate that ACE2 has an impact on inflammation. So a reduced number of ACE2 elevate interleukin-6 and thus cytokine storms. Patients die because of the overactivity of their immune system [5].

Conclusion

Why males may have a reduced number of ACE2 in old age still unclear but undoubtedly it is in their biology and modern genetics will help us to understand this.

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