

Natural Killer Cells: Flare Amidst the Grim

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Abstract

The monumental effect of COVID-19 on medical systems worldwide necessitates a better knowledge of the immune responses associated with SARS-CoV-2 infection in order to develop therapeutic solutions. Although several distinctive features of the disease have been regularly found, we are still in the early stages of closing this knowledge gap.

Natural Killer Cells are still a shining light in these difficult times. Up until recently, the majority of NK cell research was devoted to the treatment of cancer. However, because NK cells are non-specific, they might work well against any virus now and in the future. Our article is an attempt to shed light on and draw the scientific community's attention to the fact that it has become crucial to look into the specific mechanisms underlying NK cell function in order to better understand infections like SARS-CoV-2 and develop cutting-edge immunotherapy in the future.

Keywords: SARS-CoV-2, Natural Killer Cells, Immunotherapy

"You never let a serious crisis go to waste. And what I mean by that is it's an opportunity to do things you think you could not do before"

Following the worldwide financial crisis in the year 2008, Rahm Emmanuel (Barack Obama's Chief of Staff) said the above fit perfectly within the ongoing COVID-19 pandemic. Just in a couple of years since the primary reported case of the novel coronavirus infection, it has briskly spread to over 200 countries and territories around the world infecting over 255 million people and killing more than 5.1 million people [1].

The "Theory of Evolution by Natural Selection" by Charles Darwin, which states that life forms, whether they be humans or viruses, best adapted to their environment are most successful in surviving and reproducing while all others die away, is still relevant today as the coronavirus catastrophe is wreaking havoc across the entire world. Furthermore, according to the idea of evolution, new types of life will continue to exist at random over time. In order to live, viruses like the Coronavirus will continue to compete for appropriate hosts like humans [2]. Is the human race prepared to endure these disasters at this point? We think the answer is "Yes," and it is time to turn to one of our immune system's most powerful tools: natural killer (NK) cells. NK cells, which were initially known for their capacity to mediate tumor cell lysis, are now acknowledged as one of the most aggressive immune cells, significantly influencing host resistance to a variety of viral infections. Although we waited too long, research has finally been done to understand how NK

cells contribute to the anti-tumor and antiviral response. Many such studies have shown that NK cells not only kill altered cells during the earliest stages of infection, prior to the development of adaptive immunity but also play a critical role in regulating a host of immunological processes during the development of adaptive immunity [3]. The theory of co-evolution gives us hope that our immune responses will eventually converge to an equilibrium state in this evolutionary "arms race," even though we are aware that cancer cells, as well as many viral ligands, will evolve to subvert the immune responses by devising methods to disrupt the host immune signaling cascades or by activating the inhibitory receptors. It is unlikely that hosts or diseases would stray too far from this equilibrium over millions of years of evolution.

However, there is still much to be learned about the methods by which NK cells identify and react to various cancers and viruses. Unknown are several human NK cell receptors that could enable NK cells to directly detect altered cells. Additionally, it is crucial for future study to comprehend the primary signalling pathways used when NK cells are activated in response to various infections, as well as the receptor-ligand families involved. We will have a solid foundation for the creation of future immune treatments based on NK cells to regulate the anti-tumor and antiviral activity of human NK cells once we have a more thorough knowledge of these interactions and responses. We have been able to learn more about our immune system thanks to the present Covid-19 crisis, and NK cells will continue to be a glimmer of light in the gloom.

References

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