



With Aging What Happened to Our Immunesystem ?

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Recently, cultural awareness, especially the health awareness of the individual, has increased dramatically due to the spread of the Corona pandemic, which has increased curiosity and determination to find answers to a number of questions that come to mind. About how, why and when a person is at risk from infection, how the severity and severity of the infection varies between people, and what is the relationship of age or psychological state to this. There is no doubt that the increase in age and mental state disorders such as depression, for example, have similar consequences on the general health of the person.

One of the most important consequences of the increase in age is general health disorders and immune health disorders in particular, and what we should focus on is what are these variables that occur, so we will talk briefly about this topic.

The aging is a major risk for morbidity and mortality with infection, so the immunosystem with its component show defect with aging, Shift in cytokines, Changes affecting the innate immune system, Changes affecting the adaptive immune system with age, In a review article, Jin., *et al.* 2021 have shown the dysfunction of lysosome (that in normal state regulate digestion and recycling of cellular waste) in T cell immunity and in memory T-cell also, and during the life there is a balance between production and degradation of free radicals by oxidative stress and lead to cause low-grade inflammation (inflammaging) which characterized by increased levels of circulating cytokines and pro-inflammatory markers and that's will lead to increase in the susceptibility to any infection and less response to vaccines. The age-related defects in T cells appear from imbalanced T -cell homeostasis as biased differentiation upon activation according to the study of (Goronzy

and Weyand, 2019), e.g., end-differentiated effector CD45RA⁺ CD28⁻ T cells in older people accumulate and give an expression pattern of cytokines and cytotoxic proteins reminiscent of innate immunity and the senescence-associated secretory phenotype (SASP) as its also found in the result's study of (Akbar., *et al.* 2016 and Callender., *et al.* 2018). The immunosenescence thus result by many causes like telomere shortening, oxidative stress thymus involution and less T- cell function all these causes of immunosenescence can cause autoimmune disease or chronic infection so that will increase the inflammation which may lead to many disorders such as atherosclerosis, type 2 DM, dementia and osteoporosis, hormonal changes due to age can also increase inflammation which have strong effect on decrease function of T cell. Also, the impairment of the immune surveillance function increased prevalence of cancer associated with age. However, some individuals reach to advanced ages without any health problems, referred to as healthy aging may be due to genetic and environmental conditions yet to be explained.