

Preface

Progressive alterations in the immune system that develop with aging are encompassed by the terminology “immunosenescence.” These changes have been reported to account for a variety of phenomena leading to a distorted immune competence in the elderly. Immunosenescence covers increased susceptibility to infection and cancer as well as decreased vaccination efficiencies and the altered ability of the immune system to control autoimmunity and chronic inflammation. Immunosenescence coincides with physiological aging and contributes to numerous immunopathological disorders and alterations. Conversely, chronic inflammatory disorders can accelerate “immunosenescence” processes.

Although immunosenescence has now become more and more a hot topic in immunology, still only selected research groups dedicate themselves to this area of immunological research. One drawback might have been that clinical immunologists often tend to perform experimental work with mice rather than to conduct work with human cells. Indeed, the mouse has been undoubtedly a valuable tool to disclose a variety of immunological mechanisms. However, mice may be useless for experimental models or simulations of human immunosenescence. They are inbred, short-lived, and usually kept safe from as many pathogens as possible. On the contrary, humans have a variety of genetic backgrounds and according to the demographic developments nowadays live long and longer and acquire numerous pathogens (many of them yet to be discovered). Thus, age-associated alterations of human immunity should be studied in humans.

Up to now available data with respect to the aging of the immune system and consequences for immunity support the notion that the underlying mechanisms of age-related immunosenescence can by far not be explained with alterations of single cell types or single gene functions but are rather a result of manifold changes in multiple cell types and their functions. The present reviews seek to discuss major current topics dealing with age-related alterations of human immune competence.

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