Pathogenesis of somatic mutations in people with aging

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Germinative mutations determine hereditary predisposition to various diseases, initiating their early manifestation and rapid progression. At the same time, the proportion of germinative mutations is significantly less compared to the somatic mutations prevailing in humans that occur in various cells throughout their life (during ontogenesis). The appearance of malignant tumors, type 2 diabetes, hypercholesterolemia and other diseases / pathological conditions in aging people is accompanied by the development of corresponding somatic mutations. Somatic mutations provide genetic fixation of compensatory-adaptive reactions (functional at the initial stage) developing in aging people in response to impaired tissue renewal / regeneration, decreased production of sex hormones and other pathological conditions. The mechanism of somatic mutations is similar to the genetic changes occurring in cells during their differentiation and is due to the ranking of genes with the removal of non-functioning DNA sections. This is associated with irreversible changes in malignant and other cells (for example, those that have become insulin-resistant). Timely restoration of tissue renewal (regeneration) and adequate replacement of sex hormones in aging people can significantly reduce the risk of developing compensatory adaptive responses and accordingly, subsequent somatic mutations that cause irreversible cellular changes.

Recent Publications:

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4. Pechersky AV. The influence of partial androgen deficiency in aging men (PADAM) on the development of benign prostatic hyperplasia and prostate cancer. American Research Journal of Urology 2019; 3(1): 1-16.
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Biography

Pechersky AV is an Associate Professor at North-Western State Medical University named after I.I. Mechnikov, St. Petersburg, Russia. His achievements include the original articles devoted to the influence of partial androgen deficiency among aging men (PADAM) on the development of benign prostatic hyperplasia, prostate cancer and metabolic syndrome, diagnostics and treatment of partial androgen deficiency of aging men, regeneration, immune system, carcinogenesis, cicatrization, desensitization, immunological tolerance and antitumor immunotherapy.

Received: May 20, 2022; **Accepted**: May 23, 2022; **Published**: August 01, 2022