

#1981 - An overview of the mechanism of age-related physiological processes on kidney function

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Given the fact that the aging population of Iran is increasing, it requires more studies to be done on age-related physiological changes in order to be able to appropriately control some diseases in elderly people with the help of this knowledge and defer these physiological changes. One of the systems that is affected by this process in the body is urinary system. Studies have shown that biologic processes can gradually cause structural and functional changes in kidneys, leading to renal failure.

Vascular and tubular changes that reduce kidney function are among these processes. These include renal vascular atherosclerosis, glomerular circulation disorder, tubular atrophy, kidney tissue fibrosis, tubular diverticulum, glomerular basement membrane thickening and so on .

Of course it should be noted that taking some medicines and the incidence of some diseases can affect these processes and accelerate the process of destruction in the kidney. In this article, we review the mechanism of age-

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related changes in kidney tissue, because trying to realize the mechanism of age-related changes requires an understanding of the mechanisms that set it up. Understanding these changes is essential for further investigations and interventions.

Keywords: aging, kidney, physiological changes

References

1. O'Sullivan, E. D., Hughes, J., & Ferenbach, D. A. (2017). Renal Aging: Causes and Consequences. *Journal of the American Society of Nephrology : JASN*, 28(2), 407-420. <http://doi.org/10.1681/ASN.2015121308>
2. Bridges, C. C., & Zalups, R. K. (2017). The Aging Kidney and the Nephrotoxic Effects of Mercury. *Journal of Toxicology and Environmental Health. Part B, Critical Reviews*, 20(2), 55-80. <http://doi.org/10.1080/10937404.2016.1243501>
3. Denic, A., Glassock, R. J., & Rule, A. D. (2016). Structural and functional changes with the aging kidney. *Advances in Chronic Kidney Disease*, 23(1), 19-28. <http://doi.org/10.1053/j.ackd.2015.08.004>
4. Wang, X., Bonventre, J. V., & Parrish, A. R. (2014). The Aging Kidney: Increased Susceptibility to Nephrotoxicity. *International Journal of Molecular Sciences*, 15(9), 15358-15376. <http://doi.org/10.3390/ijms150915358>
5. Huber, T. B., Edelstein, C. L., Hartleben, B., Inoki, K., Jiang, M., Koya, D., ... Dong, Z. (2012). Emerging role of autophagy in kidney function, diseases and aging. *Autophagy*, 8(7), 1009-1031. <http://doi.org/10.4161/auto.19821>
6. Hommos, M. S., Glassock, R. J., & Rule, A. D. (2017). Structural and Functional Changes in Human Kidneys with Healthy Aging. *Journal of the American Society of Nephrology : JASN*, 28(10), 2838-2844. <http://doi.org/10.1681/ASN.2017040421>
7. Hodes, R. J., Sierra, F., Austad, S. N., Epel, E., Neigh,

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- G. N., Erlandson, K. M., ... Hunt, P. W. (2016). Disease drivers of aging. *Annals of the New York Academy of Sciences*, 1386(1), 45-68.
<http://doi.org/10.1111/nyas.13299>
8. Sataranatarajan, K., Feliars, D., Mariappan, M. M., Lee, H. J., Lee, M. J., Day, R. T., ... Kasinath, B. S. (2012). Molecular events in matrix protein metabolism in the aging kidney. *Aging Cell*, 11(6), 1065-1073.
<http://doi.org/10.1111/accel.12008>
 9. O'Brown, Z. K., Van Nostrand, E. L., Higgins, J. P., & Kim, S. K. (2015). The Inflammatory Transcription Factors NFκB, STAT1 and STAT3 Drive Age-Associated Transcriptional Changes in the Human Kidney. *PLoS Genetics*, 11(12), e1005734.
<http://doi.org/10.1371/journal.pgen.1005734>
 10. Glasscock, R. J., & Rule, A. D. (2012). The implications of anatomical and functional changes of the aging kidney: with an emphasis on the glomeruli. *Kidney International*, 82(3), 270-277.
<http://doi.org/10.1038/ki.2012.65>
 11. Stefanska, A., Eng, D., Kaverina, N., Duffield, J. S., Pippin, J. W., Rabinovitch, P., & Shankland, S. J. (2015). Interstitial pericytes decrease in aged mouse kidneys. *Aging (Albany NY)*, 7(6), 370-382.
 12. Lee, H. J., Feliars, D., Barnes, J. L., Oh, S., Choudhury, G. G., Diaz, V., ... Kasinath, B. S. (2018). Hydrogen sulfide ameliorates aging-associated changes in the kidney. *GeroScience*, 40(2), 163-176.
<http://doi.org/10.1007/s11357-018-0018-y>
 13. Khan, S. S., Singer, B. D., & Vaughan, D. E. (2017). Molecular and physiological manifestations and measurement of aging in humans. *Aging Cell*, 16(4), 624-633. <http://doi.org/10.1111/accel.12601>