

# Studies in renal hypertension find important immune system differences between sexes

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Women account for half of all cases of high blood pressure (hypertension) in the U.S., yet the majority of hypertension research focuses on men. A review of more than 80 studies highlights sex differences in hypertension-related kidney (renal) disease and explores possible reasons why women respond differently than men. The article, published in the *American Journal of Physiology—Renal Physiology*, emphasizes the need for more hypertension research in females.

Previous studies have shown that the effect of [blood pressure](#) on the kidneys varies depending on sex. Kidney function typically declines more quickly in men with [chronic kidney disease](#) (CKD) than in women. However, a lack of studies on women with CKD makes identifying the physiological factors that lead to this protective response difficult. Researchers from Augusta University in Georgia analyzed rat studies that suggest new causes of CKD, including immune function, to demonstrate why males fare worse than females in hypertension-related kidney injury.

Hypertension has been shown to be a state of inflammation characterized by an increase in T cells ([white blood cells](#)) in the kidneys. Some of these T cells, called T regulatory (Treg) cells, protect against kidney disease and injury. Rodent studies have found that in hypertension females have more Tregs than males, while males have higher concentrations of Th17 cells. Th17 cells, unlike Tregs, cause inflammation. These differences in the immune system are thought to be "critical to the cardioprotection that is often seen in females," explained

Jennifer Sullivan, first author of the review. Scientists may be able to someday use T cells as a therapeutic target for hypertension, but additional research "to learn about the mechanisms driving disease in the female" is needed to assert the same finding in humans, Sullivan said.

**More information:** Jennifer C. Sullivan et al. Sex and gender differences in hypertensive kidney injury, *American Journal of Physiology - Renal Physiology* (2017). [DOI: 10.1152/ajprenal.00206.2017](https://doi.org/10.1152/ajprenal.00206.2017)

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