END-STAGE RENAL DISEASE

Link between prehypertension and risk of ESRD grows stronger

Prehypertension (blood pressure that is above optimal, but still within the normal range) is associated with an increased long-term risk of developing end-stage renal disease (ESRD) even after adjusting for other cardiovascular risk factors, according to findings published by researchers at the Southern Medical University, Guangzhou, China. “Our study had sufficient power to show that risk of ESRD is increased even with fairly mild elevations of [blood pressure],” the investigators write.

The link between prehypertension and risk of ESRD is controversial, with studies providing conflicting results. Accordingly, Yuli Huang and co-workers performed a meta-analysis of six prospective cohort studies that assessed the association between prehypertension and incident ESRD, identified by a systematic literature review. The meta-analysis included data from 1,003,793 male and female adults of Asian, American and European ancestry, who were followed up for 8–26 years.

Overall, prehypertension was significantly associated with the risk of

“ [This study shows] a robust and statistically significant association between prehypertension and ... ESRD... ”

developing ESRD, and this association was maintained even when patients were stratified according to age, sex, ethnicity and trial characteristics. Compared with optimal blood pressure, even mild prehypertension (120–129/80–84 mmHg) was associated with an increased relative risk of ESRD (1.44), and the risk increased further (2.02) for patients with high-range prehypertension (130–139/85–89 mmHg).

The researchers acknowledge several limitations in their study, notably the lack of access to individual patient data and use of single-day blood pressure measurements. However, as the data from most studies included in the meta-analysis were adjusted for other cardiovascular risk factors, such as age, sex, ethnicity, BMI, cholesterol, physical activity, smoking and socioeconomic status, the likelihood

that confounding variables influenced the association between prehypertension and ESRD is reduced. Additionally, only two of the six studies included in the meta-analysis excluded patients with chronic kidney disease at baseline. However, when Huang and colleagues excluded patients with known chronic kidney disease at baseline from their analysis, the association between prehypertension and ESRD was not significantly affected.

The researchers’ report concludes, “Our study ... documented a robust and statistically significant association between prehypertension and the incidence of ESRD, especially for individuals with high-range prehypertension. [This group] may be an important study population for future controlled trials of pharmacologic treatment.”

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Original article Huang, Y. *et al.* Prehypertension and incidence of ESRD: a systematic review and meta-analysis. *Am. J. Kidney Dis.* doi:10.1053/j.ajkd.2013.07.024