not. Finally, the discrepancy between KIM-1 and NGAL results is curious, although in the manuscript the authors suggest that KIM-1 has weaker prognostic value than NGAL. All limitations are acknowledged by the authors and they correctly advocate for large international collaborations to validate early studies such as this.

Nevertheless, the present study does highlight a potential role for subclinical renal injury in predisposing women with type 1 diabetes to preeclampsia. In addition, this early work sets the stage for larger investigations to determine whether incorporation of NGAL into current models can improve risk prediction for preeclampsia.

- Dylan Burger & Akram Abolbaghaei

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Hot Off the Press

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Blood pressure lowering and outcome according to baseline blood pressure

Many guideline recommendations for hypertensive patients favour a target for treatment in most patients to a systolic blood pressure of less than 140 mm Hg. Furthermore, systematic reviews and meta-analyses suggest that more intensive treatment is beneficial compared to less intensive treatment [1,2]. There is less agreement on how far systolic blood pressure should be reduced. While results from recent reviews and meta-analyses [3-5] suggest that a target systolic blood pressure of approximately 130 mm Hg in high-risk cardiovascular patients may be optimal, the benefit for hypertensive patients in primary prevention and with less risk remains more uncertain.

Recently, Brunström and Carlberg [6] performed a study that may help to increase our understanding on these issues. The authors performed a systematic review and meta-analysis on the association of blood pressure lowering with cardiovascular morbidity and mortality across different baseline systolic blood pressure levels to assess the optimal cut-off for treatment of hypertension. The authors included trials with 1000 or more patient years of follow-up that compared antihypertensive drug treatment versus placebo, or compared one drug treatment with different target blood pressure values. Studies comparing different drug classes were not included, and excluding studies in patients with heart failure or left ventricular dysfunction and in patients with a recent myocardial infarction. Brunström and Carlberg eventually included 74 trials with 306 273 participants (40 % women, mean age 64 years). The majority, 51 studies including 192 795 patients (47 % women, mean age 63 years), were considered primary preventive, while the remaining trials were considered secondary preventive, mostly in coronary heart disease or stroke patients.

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Mean baseline systolic blood pressure in the primary preventive studies was 154 mm Hg. Patients were followed up for a mean of 4.0 years and the mean difference between active treatment and control was 7 mm Hg. Treatment to lower blood pressure reduced the risk for all-cause mortality by 7 % (95 % confidence intervals 0 to 13 %) with a baseline systolic blood pressure of 160 mm Hg or above, by 13 % (0 to 25 %) with a baseline pressure of 140-159 mm Hg, and did not reduce all-cause mortality (2 %, -4 to 10 %) with a baseline systolic blood pressure below 140 mm Hg. Similar results were obtained for major cardiovascular endpoints (MACE), coronary heart disease, and stroke, while heart failure was reduced only at basal systolic blood pressures of 160 mm Hg or above, and for values below 140 mm Hg.

There were 12 trials in coronary heart disease patients including 77 562 participants. Baseline systolic blood pressure was lower in these studies (138 mm Hg) than in the primary preventive trials. Patients were followed up for a mean of 4.5 years, and the mean systolic blood pressure difference between active treatment and control was 4 mm Hg. Thus, no analyses stratified by baseline systolic blood pressure were performed. Overall, treatment to lower blood pressure reduced the risk for MACE (by 10 %, 3 to 16 %), coronary heart disease (by 12 %, 0 to 23 %), stroke (by 17 %, 4 to 27 %), and heart failure (by 17 %, 4 to 28 %), with no significant effects on all-cause mortality (by 2 %, -7 to 11 %) or cardiovascular mortality (by 5 %, -9 to 16 %). The six trials in stroke patients including 33 102 participants had a baseline systolic blood pressure of 146 mm Hg and mean follow up was 2.9 years. The mean systolic blood pressure difference between active treatment and control was 6 mm Hg. There was a trend for a reduced risk for cardiovascular mortality, MACE, and stroke in these analyses. Of note, there were fewer patients and a shorter follow up period, as compared to the other patient groups.

Conclusions derived from meta-analyses are critically dependant on the selection of studies included, the quality of studies eventually included, the statistical methods applied and the methods of standardization of the results, and the availability of individual patient data. These issues may contribute to the slightly different conclusions shown in the study by Brunström and Carlberg, as compared to other recent publications. Nevertheless, these results confirm the benefit of antihypertensive treatment in primary prevention of patients with a baseline systolic blood pressure of 140 mm Hg or above. Furthermore, the mean age of the participants in the studies considered primary preventive was 63 years, suggesting that these results are likely valid also in older (65 years or above) patients. However, the current results did not show a benefit of antihypertensive treatment in primary prevention with a baseline systolic blood pressure below 140 mm Hg. Second, the current results in patients with coronary heart disease, where baseline systolic blood pressure was 138 mm Hg, provide circumstantial evidence for a benefit of antihypertensive treatment for patients with a baseline systolic blood pressure below 140 mm Hg.

In conclusion, while a target for treatment in most hypertensive patients may be a systolic blood pressure of less than 140 mm Hg, the current analysis support previous results to suggest that target systolic blood pressure of 125-135/70-75 mm Hg in high risk cardiovascular patients may be warranted [7].

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