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The benefit of lower target blood pressure in hypertension during pregnancy

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Hypertension in pregnancy is associated with short term risks for both mothers (preeclampsia and eclampsia, stroke, heart failure, pulmonary oedema, acute kidney injury, placental abruption, and death) and for offspring (preterm birth or birth at small-for-gestational age, and perinatal death). However, whereas recommendations for treating hypertension in adults are clear and there is evidence supporting treatment at increasingly lower levels[1,2] the case for treating mild-to-moderate hypertension in pregnancy has remained unclear[3,4].

The Chronic Hypertension And Pregnancy (CHAP) study by Tita and colleagues[5] provides important new information to this issue. This open labelled randomized parallel group study aimed to evaluate antihypertensive therapy compared with control among pregnant women with mild chronic hypertension. Inclusion criteria were singleton pregnancies with gestational age less than 23 weeks and mild hypertension (defined as systolic blood pressure 140–159 mm Hg or diastolic blood pressure 90–104 mm Hg, or documented hypertension with previous or current antihypertensive treatment). Thus, 1208 participants with mild chronic hypertension were randomized to a blood pressure target below 140/90 mm Hg, and 1200 women to the control group, where antihypertensive therapy was withheld unless blood pressure was 160/105 mm Hg or higher. Baseline blood pressure was 134/84 mm Hg, body mass index 38 kg/m^2, diabetes was present in 16%, 48% were non-Hispanic black women, 28% non-Hispanic white, and 20% Hispanic. The preferred drug therapy was labetalol or nifedipine (62 and 36% of participants, respectively); aspirin was taken by 45% at enrollment and 74% at the time of delivery. Primary outcome was a composite of preeclampsia with severe features, medically indicated preterm birth at a gestational age less than 35 weeks, placental abruption, or fetal/neonatal death. The primary safety outcome was poor fetal growth. Major secondary outcomes included a composite of maternal death or serious complications, and a composite of serious neonatal complications.

Mean blood pressure between randomization and delivery was 129/79 mm Hg in the active treatment group and 133/82 mm Hg in the control group, corresponding to a 3.1/2.3 mm Hg difference. The primary outcome was reduced in the active treatment group (30.2 vs. 37.0% of the control group, risk ratio and 95% confidence interval 0.82 [0.73–0.92], P < 0.001). These results were driven by reductions in preeclampsia with severe features and by medically indicated preterm birth (23.3 vs. 29.1%, 0.80 [0.70–0.92], and 12.2 vs. 16.7%, 0.73 [0.60–0.89], respectively). The authors determined the numbers needed to treat to prevent one primary outcome to be 14-15 participants. The safety outcome of newborns showed no difference between the two study groups.

Taken together, this study[5] provides new evidence supporting treatment of mild chromic hypertension in pregnancy to a target of less than 140/90 mm Hg. The improvement in pregnancy outcome (a primary composite outcome including preeclampsia with severe features, medically indicated preterm birth, placental abruption, or fetal or neonatal death)

was largely due to reduction in preeclampsia with severe features and in medically indicated preterm birth. Second, there were no safety concerns to the outcome of newborns. However, there are limitations to this study to consider. The authors did not include out of office blood pressure measurements, which is increasingly used in pregnancy. The lower boarder of target blood pressure remains to be demonstrated. The results may not be generalized to women with hypertension in pregnancy diagnosed after gestational week 23. This notwithstanding, these novel findings suggest treatment of hypertension in pregnancy at lower levels than previous practice. There may be reasons to revise current recommendations for the treatment of elevated blood pressure in pregnancy.

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