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Comparative efficacy and safety of oral antihypertensive agents in pregnant women with chronic hypertension: a network meta-analysis

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We use this protocol and it's working

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Abstract

Chronic hypertension complicates 3-5% of pregnancies, although the most appropriate antihypertensive treatment remains under investigation. The present network meta-analysis aims to accumulate current evidence in the field in order to compare the efficacy and safety of all oral antihypertensive agents in pregnant women with pre-existing hypertension. To achieve this, Medline, Scopus, CENTRAL, Web of Science, Clinicaltrials.gov and Google Scholar will be systematically searched. All randomized controlled trials and cohort studies will be included. Case-control, cross-sectional, as well as studies examining women with pregnancy-induced hypertension will be excluded. A frequentist random-effects network meta-analytic model will be implemented. Treatments will be ranked according to their estimated P-scores. Credibility of evidence will be evaluated under the GRADE framework with the Confidence in Network Meta-Analysis (CiNeMA) approach.

Troubleshooting

1 Review title Comparative efficacy and safety of oral antihypertensive agents in pregnant women with chronic hypertension: a network meta-analysis

2 Review question Population: Pregnant women with chronic/pre-existing hypertension Intervention: Oral antihypertensive treatment Comparator: Pregnant untreated women with chronic hypertension Outcomes: Preeclampsia, severe hypertension, placental abruption, cesarean section, gestational age at delivery, preterm birth, small for gestational age, birthweight, perinatal death and Apgar score Study types: Randomized controlled trials and observational cohort studies

3 Exclusion criteria -Gestational hypertension/pregnancy-induced hypertensive disorders -Anti-hypertensive drug intake for indications other than hypertension -Intake of angiotensin-converting enzyme inhibitors or angiotensin receptor blockers -Non-hypertensive control group -Case-control studies -Cross-sectional studies -Case-reports -Conference proceedings -Animal studies

4 Searches -Systematic search of databases: MEDLINE, Scopus, Cochrane central register of controlled trials (CENTRAL), Web of Science, Clinicaltrials.gov, Google Scholar. -Systematic screening of reference lists of all included studies. -Systematic screening of studies included in previous systematic reviews/meta-analyses in the field. -Application of no date or language restrictions. -Key-terms: “hypertension, chronic hypertension, antihypertensive, pregnancy, preeclampsia, nifedipine, amlodipine, labetalol, atenolol, pindolol, oxprenolol, methyldopa, ketanserin, furosemide, diuretic, beta-blocker, calcium channel blocker”

5 Data extraction Extracted data: Name of first author, year of publication, study design, eligibility criteria, definition of severe hypertension, definition of preeclampsia, aspirin administration, type of antihypertensive treatment, number of patients, maternal age, body mass index, parity, baseline systolic blood pressure, percentage of secondary hypertension, smoking, duration of hypertension, history of obstetric complications. The outcomes of interest were: incidence of preeclampsia, severe hypertension, placental abruption, cesarean section, gestational age at delivery, preterm birth, small for gestational age, birthweight, perinatal death and 5-min Apgar score <7.

6 Data synthesis -Network meta-analysis: Frequentist random-effects statistical model -Confidence intervals: 95% level -Heterogeneity assessment: Estimation of inconsistency index (I2), between-study variance (τ2) and 95% prediction intervals -Publication bias assessment: Inspection of comparison-adjusted funnel plots, Egger’s test, Thompson-Sharp test -Transitivity assumption assessment: Comparison of distributions of maternal age, body mass index, parity, baseline systolic blood pressure, percentage of secondary hypertension, smoking, duration of hypertension, history of obstetric complications among different interventions. -Consistency assumption assessment: Evaluation of inconsistency with a global test (design-by-treatment interaction) test and a local

(Separating Indirect from Direct Evidence-SIDE splitting) test. -Ranking of treatments: P-scores -Sensitivity analysis: separate pooling of randomized controlled trials and of studies using aspirin for preeclampsia prevention -Provision of figures: Network plots, forest plots (placebo as the reference group), league tables, heatmap of P-scores

7 Risk of bias evaluation -Randomized controlled trials: Cochrane risk of bias tool -Cohort studies: ROBINS-I tool -Credibility of evidence: Confidence in Network Meta-analyses (CiNeMA) under the GRADE framework

8 Keywords hypertension, pregnancy, antihypertensive, preeclampsia, meta-analysis