20th World Congress in Fetal Medicine

ASPRE trial: effects of aspirin on mean arterial blood pressure and uterine artery pulsatility index

Rolnik DL, Syngelaki A, O'Gorman N, Wright D, Poon L, Nicolaides KH
Monash University / Fetal Medicine Foundation, Melbourne, Australia

Objective

The mechanism by which aspirin prevents pre-eclampsia is poorly understood, and its effects on biomarkers throughout pregnancy are unknown. We aimed to investigate the effects of aspirin on mean arterial pressure (MAP) and mean uterine artery pulsatility index (UtPI) using repeated measures from women at increased risk of preterm pre-eclampsia.

Methods

This was a longitudinal secondary analysis of the Combined Multimarker Screening and Randomized Patient Treatment with Aspirin for Evidence-based Preeclampsia Prevention (ASPRE) trial using repeated measures of MAP and UtPI. In the trial, 1,620 women at increased risk of preterm pre-eclampsia were identified using the Fetal Medicine Foundation algorithm at 11-13^{+6} weeks, of whom 798 were randomly assigned to receive aspirin 150 mg and 822 to receive placebo daily from before 14 weeks to 36 weeks of gestation. MAP and UtPI were measured at baseline and follow-up visits at 19 to 24, 32 to 34, and 36 weeks of gestation. Generalized additive mixed models with treatment by gestational age interaction terms were used to investigate the effect of aspirin on MAP and UtPI trajectories over time.

Results

Among 798 participants in the aspirin group and 822 in the placebo group, there were 5,951 MAP and 5,942 UtPI measurements. Trajectories of MAP raw and multiples of the median (MoM) values did not differ significantly between the groups (p-value for treatment by gestational age interaction: 0.340). In contrast, UtPI raw and MoM trajectories showed a significantly steeper decline in the aspirin group than in the placebo group, with a difference that was mainly driven by a more pronounced reduction before 20 weeks of gestation (p-value for treatment by gestational age interaction: 0.006).

Conclusion

In women at increased risk of preterm pre-eclampsia, aspirin 150 mg daily from the first trimester does not affect mean arterial pressure but is associated with a significant decrease in mean uterine artery pulsatility index, particularly before 20 weeks of gestation.