

Impact of first trimester aspirin on population prevalence of pre-eclampsia

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Objective: Prevention of severe pre-eclampsia-toxemia (PET) may be possible with 1st trimester low dose aspirin (ASA) in patients at risk. Disease complexity, subject variance, and inaccurate knowledge about individual PET risks have produced conflicting clinical study results. We assessed the impact of ASA on the anticipated incidence of PET as predicted by multiple risk factors.

Study design: Prospective cohort study of women enrolled at 11-14 weeks gestation. Factors validated in a risk algorithm (Kings College, 2008) based on 8,051 completed pregnancies with 32 cases of early (<34 weeks) and 124 late PET were obtained: (race, prior PET/chronic hypertension, parity, BMI, mean blood pressure, pregnancy associated protein-A [PAPP-A MOM] and uterine artery pulsatility [UtA PI MOM]). Based on the algorithm the predicted incidence of PET was calculated for each patient.

Results: 109/405 consecutive patients took ASA (31 for predefined maternal risk factors, 78 for factors including abnormal Doppler at 11-14 weeks. ASA lowered UtA PI MOM (0.83, [0.64-1.09] v 1.12, [0.73-1.34]; $p < 0.005$), and reduced actual PET, both early severe and late, compared to women without ASA. The algorithm predicted all PET for T1 ASA and 50% of non-treated ($p < 0.05$, figure, grey bars=predicted; solid bars=observed). ASA decreased severe early and late PET by 40%.

Conclusion: PET in our population exceeded prediction based on UK women. However, the algorithm's statistical effect of neutralizing multiple individual factors, allows demonstration of the clinical benefits: 1st trimester ASA lowers placental blood flow resistance. This in turn prevents pre-eclampsia.

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