Accelerated macrovascular atherosclerosis after preeclampsia: a meta-analysis

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DOI: 10.36129/jog.2024.S66

Objective. Preeclampsia leads to a two-to-eight fold increased risk of ischemic heart and cerebral disease. The underlying atherosclerotic process is progressive and starts at a young age. When detected early, preventive medication can be initiated to prevent an ischemic disease later in life. This meta-analysis aims to determine macrovascular prevalence of subclinical atherosclerosis over time in women after preeclamptic compared to non-preeclamptic pregnancies.

Materials and Methods. A systematic search identified studies reporting prevalence of atherosclerosis on CT or ultrasound in both formerly preeclamptic and non-preeclamptic women. Newcastle-Ottawa scale assessed quality. Logistic regression calculated odds ratios (OR) as measure of effect size for atherosclerosis prevalence. The random effects model with pooled results gave the overall odds ratio. Meta-regression determined effect of maternal age on atherosclerosis prevalence.

Results. Ten studies included 13,177 women with average age 48.7 years (range 33.2-59.5). Four studies used ultrasound (carotid) and six used CT (coronary). Overall, preeclampsia related to increased risk of atherosclerosis (OR 1.57 (95%CI 1.39-1.78)) with a prevalence of 30%. Atherosclerosis prevalence increases more with maternal age in formerly preeclamptic women (> 10% per decade) compared to non-preeclamptic women suggesting accelerated atherosclerosis. This increased risk is significant from age 44 onwards.

Conclusions. Formerly preeclamptic women are at increased risk of early-onset atherosclerosis and have accelerated rates of atherosclerosis at relatively young age. Early risk evaluation with timely interventions should be implemented in the formerly preeclamptic group to reduce the CVD burden.