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Review Article

Hypertension in Pregnancy

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Abstract

Hypertension in pregnancy is an important cause of maternal morbidity and mortality, and also has a substantial effect on fetal outcomes. In addition, it portends a higher risk of cardiovascular disease for women later in their lives. Thus, it is critical that physicians identify hypertension during the gestational period, and treat it appropriately. First-line agents for treatment typically include beta-blockers and calcium-channel blockers.

Key words: Hypertension, pregnancy, women's health

Identification of hypertension in pregnancy is important not only for fetal outcomes but hypertensive disease in pregnancy also portends a higher risk for future cardiovascular events in women.[1] The prevalence of gestational hypertension (hypertension that manifests for the 1st time during pregnancy) is 6%;[2] additionally, up to 3% of childbearing women have chronic hypertension (the prevalence is increasing as obesity rates go up).[3] Hypertension increases the risk of complications during pregnancy, including preeclampsia, fetal growth restriction, and abruptio placentae.[3] In addition, it puts expectant mothers at risk for heart failure (both with reduced and preserved ejection fraction) and right ventricular dysfunction; later in life, women are also at substantially increased risk of coronary artery disease and heart failure.[4] In fact, the treatment of hypertension has been shown to reduce maternal morbidity, but it has not been shown to substantially impact fetal outcomes.[3]

In a normal pregnancy, systemic blood pressure drops due to systemic vasodilation and decreased peripheral vascular resistance. As a result, many women with mild chronic hypertension can stop taking medication during pregnancy. Thus far, no evidence has been found that treatment of mild-to-moderate hypertension improves fetal or maternal outcomes; therefore, guidelines for treatment goals remain controversial.[4] According to the ACC/AHA guidelines, it is reasonable to treat Stage 1 hypertension to prevent future cardiovascular events.

Two of the classic first-line agents for hypertensive control have relative contraindications in pregnancy. Angiotensin-converting enzyme inhibitors and angiotensin receptor blockers can cause skull hypoplasia in the fetus, as well as anuria and renal failure (particularly in the first trimester).[5] Thiazides can cause neonatal jaundice, volume depletion, or thrombocytopenia (although one study showed no significant difference in adverse pregnancy outcomes with diuretics).[3,6] Calcium channel blockers may be used to treat hypertension in pregnancy, however, and are often considered first-line agents.[4]

The most well-studied agents for hypertension in pregnancy are beta-blockers and methyldopa. Beta-blockers, particularly labetalol, are well-studied and have been shown to be safe in pregnancy. Labetalol also has an enhanced effect on blood pressure because of its concomitant alpha-blockade. In some studies, atenolol has been shown to have an association with fetal growth restriction: Although data are limited, many practitioners avoid using atenolol as a result.[3]

Methyldopa, as mentioned, is one of the drugs that have been used the longest in pregnant women; it acts on a central alpha receptor, decreasing sympathetic tone to the heart, kidneys, and peripheral vasculature.[7] Methyldopa has an extensive safety record in pregnancy; however, its effect on blood pressure is only modest, and many women require a second agent for improved control. Thus, although it is safe, it is no longer frequently used as a first-line agent.

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Nifedipine, although less well-studied than methyldopa, has been shown to be a safe an effective agent for treating hypertension in the pregnant population. Nifedipine is a dihydropyridine calcium channel blocker and exerts its effects on the peripheral vasculature. Other calcium channel blockers, such as amlodipine (most commonly used in the treatment of essential hypertension in a non-pregnant population), have limited safety data.[5,8]

Even with proper treatment, women can develop complications from hypertension in pregnancy. Preeclampsia, defined broadly as hypertension during pregnancy with proteinuria or end-organ dysfunction, occurs in 4–5% of pregnancies.[9] Preeclampsia may develop in a woman with pre-existing gestational hypertension, or it may occur de novo. If maternal seizures occur in the setting of preeclampsia, the condition is termed *eclampsia*. The definitive treatment is delivery, but patients with mild disease can be managed expectantly. Blood pressure management is the same as for gestational and chronic hypertension in pregnancy. The pathophysiology of preeclampsia is incompletely understood; however, it has been thought to relate to increased platelet turnover and thromboxane levels.[10] Therefore, low-dose aspirin has been proposed as a preventive therapy. A 2019 meta-analysis demonstrated a modest reduction in rates of preeclampsia and fetal growth restriction in selected populations of women, with a favorable safety profile.[11]

Hypertension in pregnancy remains a significant cause of both maternal and fetal morbidity and mortality. Although the treatment of hypertension may prevent maternal morbidity, positive effects on the fetus are less clear, as described. While novel approaches for the treatment and prevention of preeclampsia are needed, focusing on lifestyle changes to prevent the development of hypertension in young women may reduce the risks for subsequent pregnancies. Short, focused interventions directed at lifestyle counseling at every clinic visit may be helpful to prevent future maternal morbidity.

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