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Hormonal Contraception in Women With Hypertension

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Hypertension, defined as a systolic blood pressure (SBP) of at least 130 mm Hg or diastolic blood pressure (DBP) of at least 80 mm Hg, is a major risk factor for cardiovascular disease (CVD). In the US, approximately 25% of women of reproductive age have hypertension.[1] Of these, less than half are aware of their diagnosis and, when diagnosed, only 10% have their blood pressure (BP) controlled.[1] Further, racial differences exist, with more than half of Black women aged 20 years or older having hypertension.[1] Selecting the appropriate hormonal contraception in women with hypertension is important because several of these contraceptives increase BP and, in those with established hypertension, increase the risk for stroke and myocardial infarction (**Figure**). This Insights provides guidance in selecting hormonal contraception given that hypertension can be either a relative or absolute contraindication.

Diagnosis

Identifying the degree of hypertension and associated risk factors is important when recommending hormonal contraception for pregnancy prevention. Proper technique and the accurate measurement of BP must be obtained (Figure). Updates from 2017 to the BP guidelines by the American Heart Association/American College of Cardiology define normal BP as less than 120/80 mm Hg, elevated BP as SBP of 120 to 129 mm Hg and DBP less than 80 mm Hg, stage I hypertension as SBP of 130 to 139 mm Hg or DBP of 80 to 89 mm Hg, and stage II hypertension as BP greater than 140/90 mm Hg.[2] The estimated number of adults aged 20 to 44 years diagnosed with hypertension increased from 10.9 million to 24.7 million with the updated hypertension definition.[3] The newly defined stage I hypertension is managed with lifestyle modification only rather than with medication.

Evidence

Ethinyl estradiol is the estrogen component of combined hormonal contraceptives (CHCs) that increases the risk of CVD in a dose-dependent response. Ethinyl estradiol is a potent synthetic estrogen that has vascular and hepatic effects that may result in increased vascular resistance, prothrombotic and proinflammatory effects, and dyslipidemia, all of which have a role in the pathogenesis of CVD.[4] BP is increased by CHC because of the increased hepatic production of angiotensinogen activating the renin-angiotensin-aldosterone system.[4] Nonoral preparations of CHC, such as transdermal preparations, vaginal ring, and injections, have been less studied in women with hypertension; however, the risks are thought to be comparable to those of combined oral contraceptives (COCs). COCs cause hypertension in up to 2% of women, with an average increase in SBP of 7 to 8 mm Hg with older COCs and less differences with newer and lower-dose 20-µg ethinyl estradiol COCs.[4] Women with established hypertension who use COCs are at higher risk of stroke and myocardial infarction than normotensive nonusers; however, the absolute risk is relatively low among women of reproductive age.[5] Although COC use is associated with increased risk of venous thromboembolism, a history of hypertension with COC use has no effect on this risk.

The progestin component of CHCs varies among the different hormonal contraception and within progestin-only contraceptives (POCs), which include progestin-only pills, levonorgestrel-releasing intrauterine device, subdermal implant, and the injectable depot medroxyprogesterone acetate (DMPA). Depending on the progestin component, there are variable effects on the coagulation cascade, but they do not have the same thrombotic effect as estrogen. Although POCs have no effect on BP, there is limited evidence that the injection DMPA increases lipoproteins and, in women with hypertension, may increase risk of stroke.[6,7] Less is known about the progestin-only intrauterine device and implant.

When progestins are used in COCs, only minor differences in CVD risk are seen among the different progestin components. Drospirenone, a novel progestin, is structurally similar to spironolactone and acts as an antagonist of aldosterone receptors with an antidiuretic effect, which may neutralize the renin-angiotensin-aldosterone system induction caused by estrogen.[4] Drospirenone in COCs decreases mean BP in women with mild hypertension. However, it has been associated with slight increase risk of venous thromboembolism compared with COCs containing other progestins, although this does not influence recommendations.[8]

Guidelines for Treatment

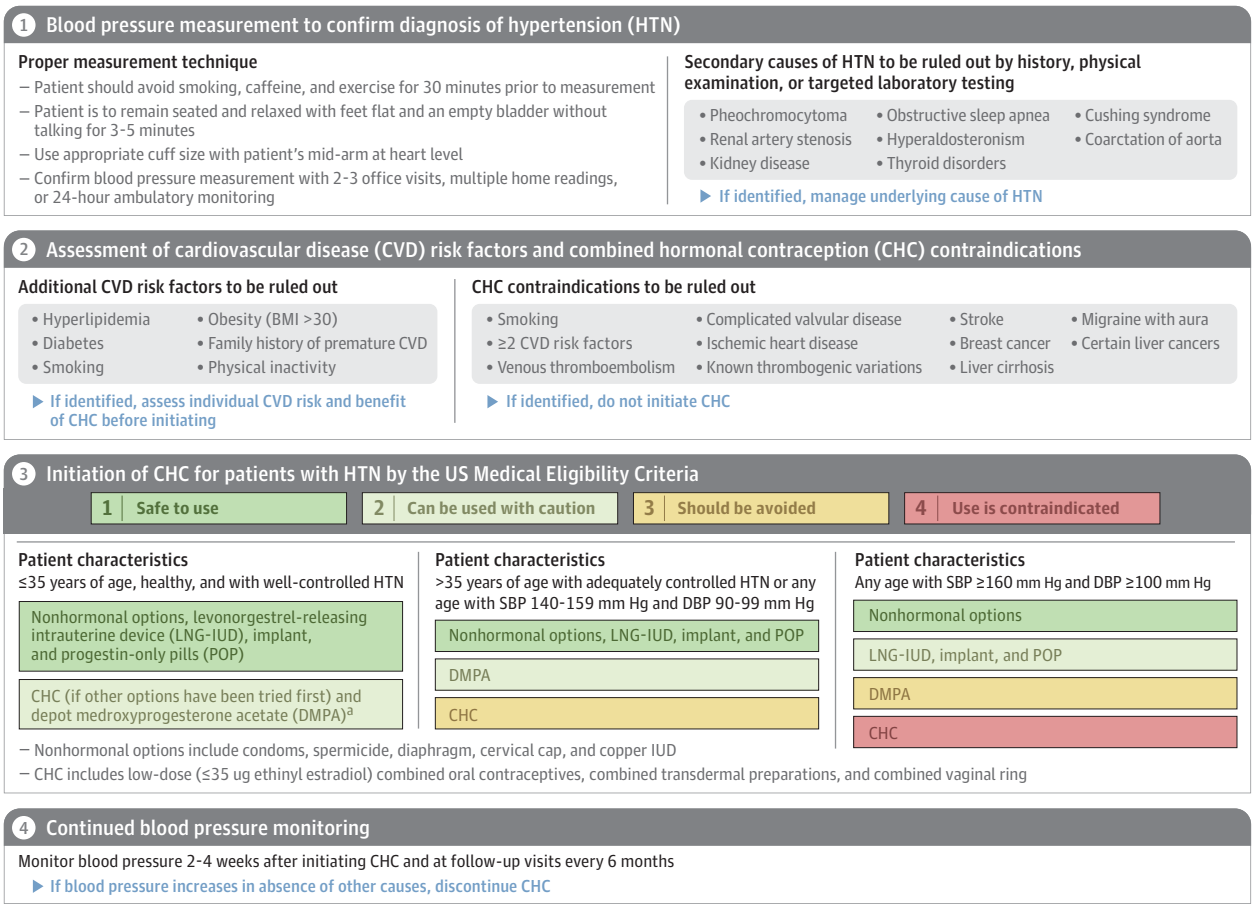
The approach to selecting which hormonal contraception to use in women with hypertension includes measurement of BP, assessment of risk factors, and consideration of age and degree of hypertension (Figure). The US Medical Eligibility Criteria for Contraceptive Use provides the most comprehensive recommendations for women with underlying medical conditions (Figure).[7] For CHC, these recommendations do not differentiate between progestin type, include only ethinyl estradiol doses less than or equal to 35 µg, and combine transdermal preparations and the vaginal ring. The various POC forms are assessed separately, but the progestin types are grouped together. For hypertension, recommendations are based on the assumption that no other CVD risk factors exist and on previous BP guidelines. Therefore, they do not provide recommendations for the updated stage I hypertension.[2]

In 2019, the American College of Obstetricians and Gynecologists published a Practice Bulletin that included the updated BP guidelines, but they continue to endorse US Medical Eligibility Criteria given the need for research in the newly defined stage I hypertension.[8] In women with hypertension, frequent monitoring of BP is important after the initiation of CHC, and use of CHC should be stopped if BP increases. Changes to BP are reversible and may return to pretreatment levels within 3 months of discontinuation.[9]

Conclusions

Hypertension is a modifiable risk factor for CVD. For women with hypertension, certain hormonal contraception increases the risk of stroke and myocardial infarction. Choosing the appropriate type of hormonal contraception for women with hypertension is based on age and degree of hypertension. POCs are generally safe in women with hypertension, but COCs should be prescribed carefully and to women aged 35 years and younger. Research is needed to understand how the updated

Figure. Approach to Initiating Hormonal Contraception in Women With Hypertension



Recommendations are based on the 2019 American College of Obstetricians and Gynecologists Practice Bulletin. This algorithm is based on expert opinion and has not been validated in clinical studies. BMI indicates body mass index; DBP, diastolic blood pressure; SBP, systolic blood pressure.

[a] DMPA may cause dyslipidemia, resulting in theoretical increased CVD risk.

guidelines for BP might change hormonal contraception management given the new definition of stage I hypertension and how different antihypertensives may affect the CVD risk of hormonal contraceptives. In addition, further studies are needed to understand the safety profiles of the nonoral hormonal preparations and ultra-low–dose (ie, 10 µg ethinyl estradiol) hormonal contraception in women with hypertension.

ARTICLE INFORMATION

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