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Controlling High Blood Pressure in Pregnancy: Safe and Effective Treatments

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Introduction

Nearly 8% of American women of reproductive age (22–44 years) suffer from hypertension, which is on the rise substantially. Between 1993 and 2002, the prevalence of pre-pregnancy hypertension in 15 women aged 54 rose by a factor of two (from 12.3 to 28.9 per 1000 deliveries). More data has proven that pregnancy-associated hypertension may contribute to early childhood cardio-metabolic illness. Pregnancy-associated hypertension continues to be a significant cause of maternal and foetal morbidity and death. However, pre-pregnancy hypertensive women with poorly controlled blood pressure in the first trimester have a significantly increased risk of target organ damage in mothers and foetuses, low birth weight, pre-eclampsia, and other adverse outcomes. The majority of women with controlled-chronic hypertension under proper management will experience successful outcomes. While there is minimal data that may be used to the management of hypertension before to pregnancy, the majority of current recommendations and clinical studies concentrate on the management and therapies for hypertension during pregnancy and breast-feeding.

Description

Pre-eclampsia, gestational hypertension and chronic hypertension are the three different forms of hypertensive diseases that can occur during pregnancy. Pre-term birth and caesarean deliveries are frequently caused by pre-eclampsia. Before pregnancy and before 20 weeks of gestation, a blood pressure reading of 140/90 mmHg or above is considered chronic hypertension. This condition is more prevalent in elderly, obese, or black women. Growth restriction, congenital heart disease, and pre-eclampsia are all connected with a higher risk of chronic hypertension. Women with persistent hypertension are more likely to experience negative outcomes, even in the absence of superimposed pre-eclampsia. 3-5% of pregnancies are complicated by chronic hypertension, but the percentage is on the rise, coupled with the tendency for women to put off having children until their 30s or 40s and obesity [1]. Chronic hypertension was linked to a number of negative outcomes, including pre-eclampsia on top of pre-eclampsia, caesarean delivery, preterm birth (37 weeks), low birth weight (2500 g), neonatal intensive care, and perinatal mortality, according to a systematic study.

The risk of pre-eclampsia, placental abruption, and foetal development limitation rises when there is mild-to-moderate pre-existing hypertension (systolic blood pressure (SBP) 140-159 mmHg or Diastolic Blood Pressure (DBP) 90-99 mmHg). In a prospective study involving 222 women with mild-to-moderate hypertension, the non-treatment group had higher rates of complications than the treatment group did for severe hypertension (66.9% vs. 25%, Odds Ratio (OR) 0.37(0.22-0.63)), renal impairment (72.8% vs. 23.1%, OR 0.32(0.19-0.52)), ECG changes (71.18% vs. 25% OR 0.35(0.21-0.59)), placental abrupti. Pre-eclampsia risk, which raises hazards for both the mother and the foetus, is as high as 46% in cases of severe chronic hypertension (>170/110 mmHg). The frequency of children delivered small for gestational age or preterm was greater than background rates (48% vs. 21%) in Chappell's study, which gathered data from 822 mothers with chronic hypertension. In order to get the best pregnancy result, pre-pregnancy blood pressure control is crucial [2].

Pre-pregnancy hypertension treatment's guidelines

Based on the data from pregnant chronic hypertension guidelines, the majority of recommendations recommended pre-pregnancy antihypertensive. The recommendations for managing chronic hypertension during pregnancy differ internationally. It is important to note that none of the several antihypertensive medications used in everyday practise have been demonstrated to be teratogenic or unsafe to use. The majority of recommendations advise women using ACE inhibitors or Angiotensin II Receptor Blockers (ARBs) who want to become pregnant to talk to their doctor about prescribing an alternative [3]. If a woman taking an ACE inhibitor or an ARB becomes pregnant, she should stop taking her antihypertensive medication (ideally within two working days of learning she is expecting), as these medications are contraindicated because they are teratogenic and increase the risk of congenital abnormalities if taken in the first trimester of pregnancy. Since it has been used to treat pregnant hypertension since the 1960s, ethyldopa is frequently regarded as the first-line medication for pre-pregnancy antihypertensive treatment with the highest amount of evidence about foetal safety. Children whose moms administered methyldopa during pregnancy had no negative growth or developmental results in a 7.5-year follow-up study. Many doctors decide to switch women's antihypertensive medications to methyldopa before getting pregnant, especially if they need more than one medication and it is doubtful that they would be able to stop taking them during the first trimester. A better option than methyldopa for severe hypertension is labetalol, a combination alpha- and beta-blocker, as it is well tolerated and has an easier twice-daily dose regimen [1,3].

Although intrauterine growth retardation and preterm birth have been documented, beta-blockers are typically harmless. Because they can prevent preterm labour, Calcium Channel Blockers (CCBs) like nifedipine are routinely used. A randomised controlled study carried out by Webster L. showed that nifedipine stabilised blood pressure of chronic hypertension in pregnancy and decreased the incidence of severe hypertension without increasing the risk of unfavourable perinatal outcomes. To reduce the risk of unexpected maternal hypotension and foetal discomfort brought on by placental hypoperfusion, sublingual nifedipine usage is advised. Amlodipine has been used during pregnancy, although there aren't enough safety data. The topic of discouraging the use of diuretics is being discussed more and more. While the British Hypertension Society (BHS) viewed the use of diuretics as a contentious issue with potential negative effects on maternal and foetal outcomes, the European Society of Hypertension/European Cardiology Society (ESH/ECS) 2013 guidelines state that it should be considered a possible or relative contraindication during pregnancy. If chlorothiazide is consumed, there may also be an elevated risk of congenital malformations and neonatal problems [2,3].

Weight management during pregnancy

The significance of body weight or weight reduction to blood pressure regulation during pregnancy has been shown in several researches 2252 pregnant women participated in a prospective research to examine the

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relationship between pre-pregnancy BMI and blood pressure throughout pregnancy. They discovered that while the amount of blood pressure changes during pregnancy, the pre-pregnancy BMI does not. Although the blood pressure of the women in this research was not restricted, it is important to note that obese and overweight women of reproductive age should be encouraged to lead healthy lifestyles, which should include losing weight before getting pregnant. Another Australian research that did not include women who had a history of high blood pressure before to becoming pregnant produced results that were at odds with the above finding. The findings demonstrated that early adult weight loss was connected with a decreased risk of pregnancy hypertension, whereas pre-pregnancy weight rise but not baseline weight was associated with an increased risk of hypertensive disorders in pregnancy [4]. A Chinese study revealed that the risk of hypertensive problems in pregnancy was strongly correlated with both pre-pregnancy BMI and gestational weight change (39).

Diet management

Although it was suggested that dietary consumption during pregnancy may contribute to the genesis of pregnancy hypertension diseases, there is still conflicting information about the link between food and the prevention of hypertensive disorders. There are no studies that include pre-pregnancy hypertensive ladies to monitor the outcomes of delivery as well as the negative pregnancy events. Pre-pregnancy consumption of a Mediterranean-style diet pattern—characterized by vegetables, legumes, nuts, tofu, rice, pasta, rye bread, red wine, and fish was discovered to be associated with a lower risk of developing hypertensive disorders in a population-based study involving participants in the Australian Longitudinal Study on Women's Health (RR: 0.58; 95% CI: 0.42-0.81). Additionally [2-4], dietary potassium and sodium consumption are thought to have a substantial role in how blood pressure changes in both the general population and hypertensive individuals. In a recent Cochrane Database systemic review, sodium intake was reduced from an average high usual level (201 mmol/day) to an average level of 66 mmol/day, below the recommended upper level of 100 mmol/day (5.8 g/day), which led to a reduction in SBP/DBP of 1/0 mmHg in white participants with normotension and 5.5/2.9 mmHg in white participants with hypertension. A different meta-analysis indicated that taking potassium supplements reduced SBP by 4.48 mmHg (95% CI: 3.07-5.90) and DBP by 2.96 mmHg (95% CI: 1.10-4.82)

To achieve blood pressure regulation as advised by the WHO, the authors indicated an appropriate dietary intake of potassium, on the order of 90 mmol/day (3510 mmHg). Studies investigating the relationship between salt consumption and the risk of pre-eclampsia in pregnant women have contradictory results. Although some sparse evidence investigated the effects of potassium consumption on the development of blood pressure in pregnant women, the relationship between the two is still up for debate among doctors [5]. There are no studies testing how much salt or potassium a hypertensive woman should consume before getting pregnant. To yet, there hasn't been enough research on the relationship between sodium and potassium to draw firm conclusions or offer advice. A significant randomised study is being conducted across the whole country, and overall food habits have remained mostly steady before pregnancy and during pregnancy.

Conclusion

Methyldopa should be used instead of ACE inhibitors or ARBs for hypertensive women who want to get pregnant. This recommendation applies to women using chlorothiazide as well. Encouragement should be given to women with persistent hypertension to continue eating foods low in sodium. Large, multicenter, randomised studies should also be carried out to evaluate the effectiveness of supplements like calcium and antioxidants that are taken starting in the pre-pregnancy period.

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