Control Of Blood Pressure In Pregnancy

What Is New ?

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Introduction

- Pregnancy induced hypertension affect 7% to 10% of all pregnancies

- Hypertensive disorders of pregnancy (HDP) remain one of the major causes of pregnancy-related maternal and fetal morbidity and mortality worldwide. Up to 10% of pregnancy-related deaths are attributed to HTN

- Even with the effective lowering of BP, the presence of hypertensive disorders of pregnancy significantly increases long-term CV risk, including future HTN, coronary disease, and stroke

- Despite the immediate and long-term cardiovascular disease risks, recommendations for diagnosis and treatment of HDP have changed little, if at all, over past decades reason is the question of

- Benefit from normalization of BP treatment for pregnant women
- concerns for fetal well-being from a reduction in utero-placental perfusion and In utero exposure to antihypertensive medication.

Hypertension in pregnancy includes the following conditions

- **Preexisting hypertension:** Starts before pregnancy or <20 weeks of gestation, and lasts >6 weeks postpartum with proteinuria.
- **Gestational hypertension:** Starts >20 weeks of gestation, and lasts <6 weeks postpartum.
- **Preexisting hypertension plus superimposed gestational hypertension** with proteinuria.

➢ Preeclampsia:

Hypertension with proteinuria (>300 mg/24 h or ACR >30 mg/mmol [265 mg/g]). Predisposing factors are

- preexisting hypertension,
- hypertensive disease during previous pregnancy,
- diabetes,
- renal disease,
- first- or multiple pregnancy,
- autoimmune disease (SLE).

Risks are fetal growth restriction, preterm birth.

➢ Eclampsia:

Hypertension in pregnancy with

- seizures
- severe headaches,
- visual disturbance,
- abdominal pain, nausea and vomiting,
- low urinary output

Immediate treatment and delivery required.

➢ HELLP:

(hemolysis, elevated liver enzymes, low platelets) syndrome

Immediate treatment and delivery required.

Pathophysiology

The initiating event in PIH

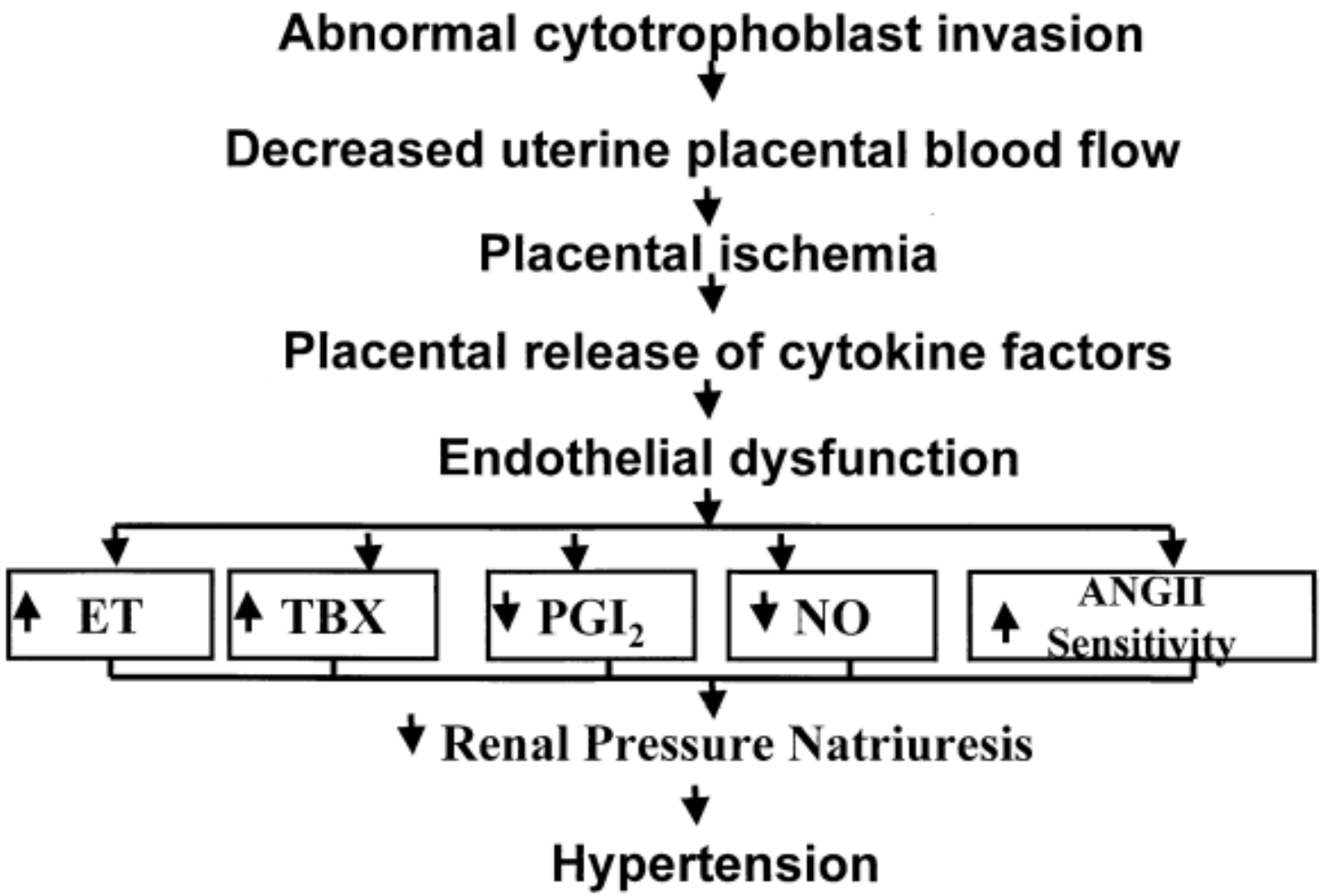
- Reduced utero-placental perfusion as a result of abnormal cytotrophoblast invasion of spiral arterioles.

- Placental ischemia lead to widespread activation/dysfunction of the maternal vascular endothelium that results in

  - enhanced formation of endothelin and thromboxane
  - increased vascular sensitivity to angiotensin II
  - decreased formation of vasodilators such as nitric oxide and prostacyclin.

Pregnancy-Induced Hypertension

Possible mechanism of action



Maternal and Fetal risks

Maternal risks include

- Placental abruption
- Stroke
- Multiple organ failure (liver, kidney)
- Disseminated vascular coagulation

Fetal risks include

- Intrauterine growth retardation,
- Preterm birth,
- Intrauterine death.

Blood Pressure Measurement in Pregnancy

Blood Pressure Measurement in Pregnancy

ESSENTIAL Office BP measurement following general guidelines. Take office BP measurement using a manual auscultatory device, or an automated upper-arm cuff device which has been validated specifically in pregnancy and pre-eclampsia (list of validated devices at www.stridebp.org).

OPTIMAL ABPM or home BP monitoring using devices validated specifically in pregnancy and preeclampsia to e-valuate white coat hypertension, DM, nephropathy.

Investigations

Investigation of Hypertension in Pregnancy

ESSENTIAL Urine analysis, full blood count, liver enzymes, hematocrit, serum creatinine and s-UA. Test for proteinuria in early pregnancy (preexisting renal disease) and second half of pregnancy (preeclampsia). A dipstick test >1+ should be followed up with UACR in a single spot urine; UACR <30 mg/mmol excludes proteinuria.

OPTIMAL Ultrasound of kidneys and adrenals, free plasma metanephrines (if clinical features of pheochromocytoma); Doppler ultrasound of uterine arteries (after 20 weeks of gestation is useful to detect those at higher risk of gestational hypertension, preeclampsia, and intrauterine growth retardation).

Management of Hypertension in Pregnancy

Initiating therapy

- The ACOG recommends antihypertensive therapy for

women with preeclampsia and a sustained systolic BP ≥160 mmHg or diastolic BP ≥110 mmHg and with chronic hypertension at a systolic BP ≥160 mmHg or diastolic BP ≥110 mmHg, with a treatment goal of 120 to 160/80 to 110 mmHg.

- The majority of hypertension societies endorse a more aggressive approach for antihypertensive treatment, recommending therapy when BP is ≥140/90 mmHg

BP Goals for Pregnant Patients
Emerging Data, Limitations, and Current Controversies

Therapeutic targets similar to the American College of Cardiology/AHA of 130/80 mmHg are recommended by The International Society for the Study of Hypertension in Pregnancy, Hypertension Canada Guidelines, National Institute for Health and Care Excellence, and World Health Organization.

There are several reasons to consider lower BP thresholds as demonstrated by a systematic review of randomized trials and CHIPS

- More aggressive treatment prevents the development of severe hypertension but no effect on rates of preeclampsia
- Tight control may have decreased the risk of preterm birth
- Less tight control show higher risk of thrombocytopenia and elevated liver enzyme levels, markers of disease severity.

Mild hypertension:

- Drug treatment at persistent BP >150/95 mmHg in all women.

- Drug treatment at persistent BP >140/90 mmHg in gestational hypertension, preexisting hypertension with superimposed gestational hypertension; hypertension with subclinical HMOD at any time during pregnancy.

- First choices: methyldopa, beta-blockers (labetalol), and DHP-CCBs (nifedipine, nicardipine).
- The use of thiazide diuretics has been debated, particularly if the individual is already chronically on a thiazide prior to the pregnancy. In this situation the thiazide diuretic may be continued during the pregnancy.

- Contraindications

- All the renin–angiotensin system inhibitors, due to direct adverse effects on the fetus
- The mineralocorticoid receptor antagonist spironolactone due to fetal anti-androgen effects.
- The beta-blocker atenolol intrauterine fetal growth inhibition

Severe hypertension:

At BP >170 mmHg systolic and/ or >110 mmHg diastolic:

- Immediate hospitalization is indicated (emergency).
- Treatment with intravenous labetalol (alternative intravenous nicardipine, esmolol, hydralazine, urapidil), oral methyldopa or DHP-CCBs (nifedipine [not capsular] nicardipine).
- Add magnesium (hypertensive crisis to prevent eclampsia).
- In pulmonary edema: nitroglycerin intravenous infusion.
- Sodium-nitroprusside should be avoided due to the danger of fetal cyanide poisoning with prolonged treatment

Delivery in gestational hypertension or preeclampsia

- At week 37 in asymptomatic women.
- Expedite delivery in women with visual disturbances, hemostatic disorders

Prevention of Preeclampsia

- Women at high risk (hypertension in previous pregnancy, CKD, autoimmune disease, diabetes, chronic hypertension)
- Women at moderate risk (first pregnancy in a woman >40 years, pregnancy interval >10 years, BMI >35 kg/m2 , family history of preeclampsia, multiple pregnancies)

- 75–162 mg aspirin at weeks 12–36.
- Oral calcium supplementation of 1.5–2 g/day is recommended in women with low dietary intake

Blood pressure postpartum

If hypertension persists, any of recommended drugs except methyldopa (postpartum depression).

Breastfeeding

- All antihypertensives excreted into breast milk at low concentrations.
- Avoid atenolol, propranolol, nifedipine (high concentration in milk). Prefer long acting CCBs.

Taken Home Massage

- HTN in pregnancy is generally diagnosed when BP is ≥140 mmHg and/or ≥90 mmHg on at least two occasions, at least six hours apart

- It is generally recommended for both chronic and gestational HTN that pharmacologic treatment be initiated when the SBP is ≥160 mmHg and/or the DBP is ≥105 mmHg

- achieving a lower BP target (DBP of 85 mmHg vs 100 mmHg) has recently been shown to decrease the maternal development of severe HTN while not increasing maternal or fetal risk.

- If target organ damage is present, initiating antihypertensive pharmacological treatment at a DBP of ≥90 mmHg should be considered

THANK YOU FOR YOUR ATTENTION