

CHRONIC HYPERTENSION IN PREGNANCY

FLAME LECTURE: 27

BURNS 11.11.23

Learning Objectives

Classify the types of hypertension in pregnancy

Describe how hypertension affects pregnancy

Describe how pregnancy affects preexisting hypertension

Identify the impact of chronic hypertension on the gravid patient and developing fetus

See also:

FLAME 27 – CHRONIC HTN IN PREGNANCY

FLAME 104 – DIAGNOSIS OF PREECLAMPSIA

FLAME 105 – MANAGEMENT OF PREECLAMPSIA

DEFINITIONS

Chronic Hypertension	Gestational Hypertension	Preeclampsia w/o severe features	Preeclampsia w/ severe features	Eclampsia
Starts < 20 wks	Starts > 20 wks	Starts > 20 wks	Starts > 20 wks	Starts > 20 wks
BP > 140/90	BP > 140/90* w/ no proteinuria and no severe features	BP > 140/90* + proteinuria <i>Proteinuria defined as:</i> - 24-hr urine collection w/ ≥ 300 mg protein - P:C > 0.3 - 1+ protein on urine dipstick (if other methods not avail)	BP > 160/105* + proteinuria OR one of the following signs of <i>end-organ damage:</i> - Plt < 100K - Elevated LFTs 2x normal - Cr > 1.1 or 2x normal - Pulmonary edema - New cerebral or visual symptoms	PreE w/ or w/o severe features + Seizures (in absence of another neurological explanation for seizures)

(*on two separate occasions, 4 hours apart)

DEFINITIONS / EPIDEMIOLOGY

HTN is deemed **CHRONIC** during pregnancy when diagnosed *before 20 weeks gestation*

With BPs > 140/90 on two separate occasions

Epidemiology:

~5% of pregnancies now affected

Typically, due to **primary (essential) hypertension**, but ~10% can be due to **secondary hypertension** (most commonly renal disease)
gHTN (HTN diagnosed >20 wks gestation) can become chronic if high blood pressures **persist >12 weeks post partum**

~15% of gestational HTN -> chronic HTN postpartum

1/3 of chronic hypertension patients will develop *superimposed preeclampsia*

PHYSIOLOGICAL CHANGES IN PREG

BPs initially drop during pregnancy, lowest in 2nd trimester

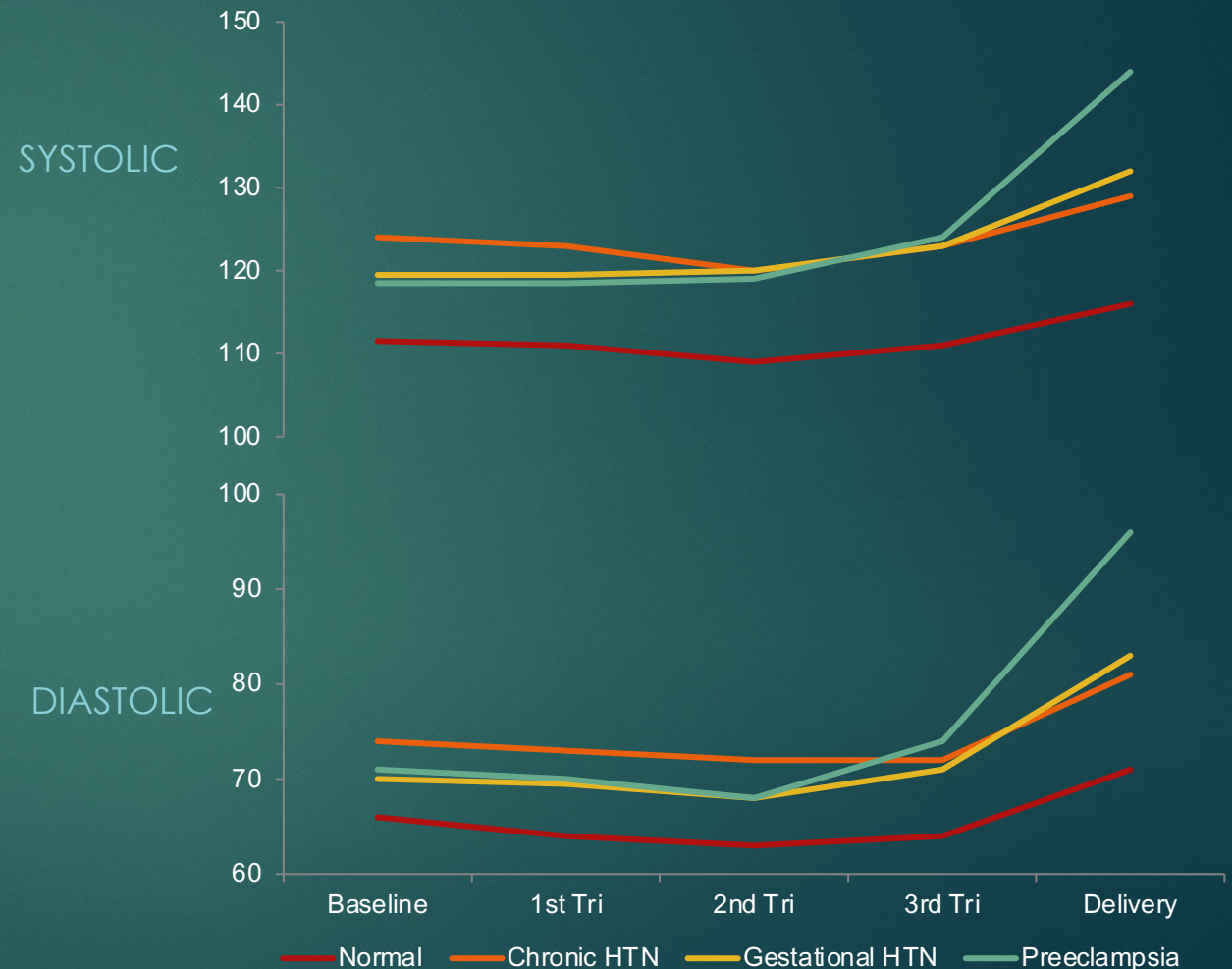
Progesterone is smooth muscle relaxant -> decreased SVR

~5-10 mmHg drop in systolic BP / ~10-15 mmHg drop in diastolic BP

BPs gradually increase during 3rd trimester (back to baseline by delivery)

Typically, not higher than baseline

Blood Pressure Averages Across Pregnancy



COMPLICATIONS

MATERNAL COMPLICATIONS

Women with *uncomplicated* cHTN are at risk for:

Superimposed preeclampsia

Gestational diabetes

Placental abruption

Postpartum hemorrhage

Cesarean delivery

If cHTN progresses to superimposed preE, there is increased risk for: placental abruption, end-organ damage, and death

FETAL COMPLICATIONS

Fetal complications in women with *uncomplicated* cHTN include:

FGR (worse in superimposed preE)

Fetal anomalies from unsafe antihypertensive medications

Premature delivery

CHTN MANAGEMENT

PRE-CONCEPTION COUNSELING

For women with known HTN prior to pregnancy, the following should be discussed:

How was it diagnosed? Prior work up for secondary HTN?

How did HTN complicate prior pregnancies? Pre-e?

Evaluate current medication regimen for teratogenic potential

ACEI, ARBs, renin inhibitors, and aldosterone antagonists are contraindicated

Statins for hyperlipidemia should be discontinued, unclear evidence of safety during pregnancy

Obtain baseline labs including: Creatinine, LFTs, and Urine Protein

Hypokalemia, high creatinine, abnormal baseline urinalysis or FH of renal disease are suggestive of secondary cause of hypertension

Consider baseline EKG in patients with long-standing disease

CHTN MANAGEMENT

BP goal levels: 120-140/80-90

All patients with BPs $>140/90$ should start antihypertensives

For non-pregnant women, many lifestyle changes are recommended to manage mild cHTN. During the pregnancy, some of these recommendations are continued, others are altered:

Low sodium diet: mildly reducing sodium intake is recommended

Diet/Exercise: healthy diet and moderate exercise should be continued during pregnancy; optimizing weight can also assist with management of cHTN

CHTN MANAGEMENT

PHARMACOLOGIC

FIRST LINE MEDICATIONS:

Labetalol (B-blocker) - avoid in asthma/CHF

Nifedipine (Ca⁺⁺ channel blocker)

Methyldopa - previously widely used, less effective for severe range BPs

ADJUNCT MEDICATIONS:

Recommend daily **low-dose aspirin** for preE prevention

Calcium supplementation also recommended in women with low-dietary intake

MEDS TO AVOID:

ACEI / ARBs - fetal anomalies including renal failure, oligohydramnios, pulmonary hypoplasia, FGR, and cardiac anomalies

Also avoid **renin inhibitors** and **mineralcorticoid antagonists**

Nitroprusside - risk of fetal cyanide poisoning

CHTN MANAGEMENT

FETAL MONITORING

Pregnancies with cHTN at risk for FGR

Recommend US surveillance for fetal growth (28-32 weeks GA + q3-4w)

If FGR identified, recommend **umbilical artery Dopplers** for surveillance of placental sufficiency

Recommend **antenatal NSTs** starting at 32 weeks if well controlled or PRN sooner if poorly controlled

CHTN MANAGEMENT

DELIVERY TIMING

cHTN – isolated, uncomplicated, controlled, not on meds – 38 0/7 – 39 6/7

cHTN – isolated, uncomplicated, controlled ON meds – 37 0/7 – 39 6/7

cHTN – difficult to control (requiring frequent med adjustments) – 36 0/7 – 37 6/7

CHTN MANAGEMENT

POSTPARTUM MANAGEMENT

Recommend BP monitoring for 72 hours postpartum to continue preE surveillance

CHTN, even when first diagnosed during early pregnancy, persists postpartum so follow up should be continued even once obstetrical care ends; first appt 7-10 days after delivery

BPs transiently increase in first few postpartum weeks, thus:

- Adjust medications to continue maintaining appropriate control

- Consider limiting use of NSAIDs as these can increase BPs

Antihypertensive safety in breastfeeding:

- Beta-blockers concentrate in breast milk, however Labetalol does so the least

- Select ACEIs, Ca⁺⁺ channel blockers, Methyldopa generally safe with breastfeeding

- Diuretics safe for neonate but can reduce milk supply so recommend limiting use

- Most commonly used: Nifedipine XL and Labetalol

REFERENCES & RESOURCES

CHIPS Trial: Magee LA, von Dadelszen P, Rey E, et al. Less-tight versus tight control of hypertension in pregnancy. *N Engl J Med* 2015; 372:407.

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Callahan, Tamara L., and Aaron B. Caughey. *Blueprints Obstetrics & Gynecology*. Philadelphia: Wolters Kluwer Health/Lippincott William & Wilkins, 2009. 6th ed.

Magee LA, von Dadelszen P, Rey E, Ross S, Asztalos E, Murphy KE, et al. Less-tight versus tight control of hypertension in pregnancy. *N Engl J Med* 2015;372:407-17.