Healthy Heart

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Honorary Editor :
Dr. Anish Chandarana

From the Desk of Hon. Editor:

Dear Friends,

There has been serious lack of precision regarding thresholds, targets and preferred agents for high BP treatment in pregnant or lactating ladies. Due to lack of scientific data, most of the guidelines are unclear and inconsistent. In this compilation, we have tried to incorporate important conclusions of guidelines and expert opinions/consensus.

- Dr. Anish Chandarana

PREGNANCY AND BLOOD PRESSURE

Physiological Changes in BP During Pregnancy:

Towards the end of the first trimester, generally BP falls by 5-10 mm of Hg due to vasodilation. During the third trimester, BP again rises to the pre-pregnancy level. The same changes are seen in ladies with pre-existing high BP. Not uncommonly, BP normalizes in many such ladies towards the end of the first trimester.

Definitions and Terminologies:

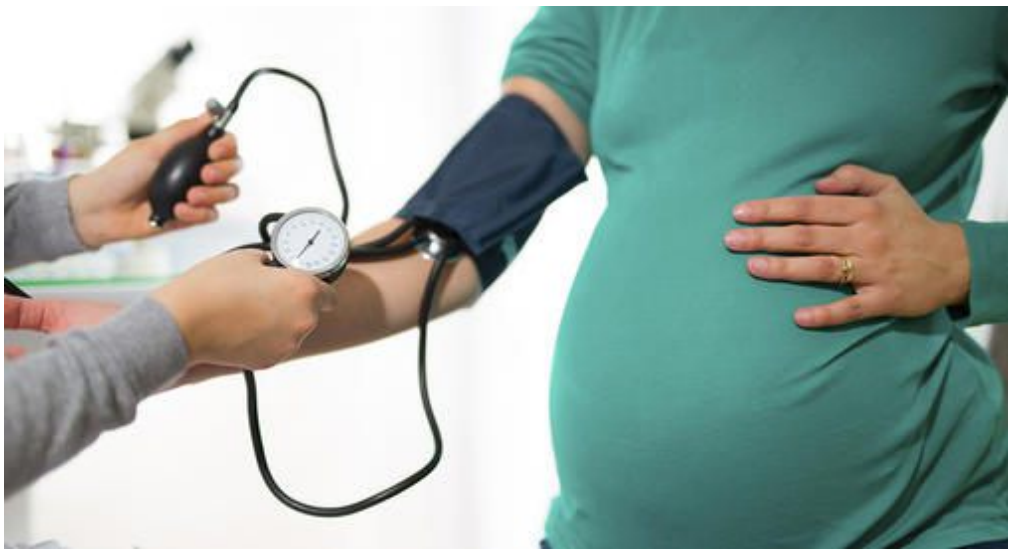
1. **Chronic HT in Pregnancy:** Blood pressure ⩾140 mm Hg systolic and/or ⩾ 90 mm Hg diastolic before pregnancy or seen before 20 weeks of gestation or the lady has been using antihypertensive medications before pregnancy or persistence of hypertension for > 12 weeks after delivery. Overall prevalence in India is less than 1-2%, but it is likely to increase with increasing prevalence of obesity and increasing age of pregnant ladies. Though majority do well in pregnancy;risk of superimposed preeclampsia, fetal growth restriction, placental abruption, preterm birth and likelihood of cesarean delivery are increased. Hypertensive ladies willing to become pregnant should be counselled well about proper diet/exercise, use of BP medicines (ACE Inhibitors, ARBs and Direct Renin Inhibitors are contraindicated) and a small risk of complications.

2. **Gestational HT:** New onset of hypertension at ⩾20 weeks of gestation in the absence of proteinuria or new signs of end-organ dysfunction. The blood pressure readings should be documented on at least two occasions and at least four hours apart. BP returns to normal by 12 weeks postpartum. "Pregnancy Induced HT" term has been abolished and should not be used any more. Few clinical characteristics if present with gestational HT, have shown an increased risk for progression to preeclampsia. They are: (a) gestational

age less than 34 weeks at diagnosis (b) mean systolic blood pressure >135 mmHg on 24-hour blood pressure monitoring (c) abnormal uterine artery Doppler velocimetry and (d) elevated serum uric acid level (>5.2 mg/dL).

3. **Preeclampsia:** Elevated blood pressure and proteinuria after 20 weeks of gestation, often accompanied by maternal organ injury and/or fetal compromise from placental dysfunction. In general population, the risk is 3% to 5% while in ladies with chronic hypertension, risk is 17% to 25%. Few factors which increase the risk of preeclampsia have been defined. Some important factors are: (a) past history of preeclampsia (b) nulliparity (c) pre-gestational diabetes (d) chronic hypertension (e) obesity (f) family history of preeclampsia (g) multiple gestation (h) increased maternal age > 35-40 years (i) excessive weight gain by the mother > 35 lbs.

4. **Superimposed preeclampsia:** Blood pressure increases in pregnancy with new-onset proteinuria or worsening of pre-pregnancy proteinuria. Laboratory abnormalities (thrombocytopenia, elevated liver function tests, and increasing serum creatinine) may be present. It is always quite challenging to diagnose preeclampsia in women with chronic hypertension because blood pressures are already elevated and proteinuria may be present before pregnancy.



Preeclampsia - Implications for Future Life of the Lady:

Preeclampsia is constituted by endothelial, vascular and metabolic dysfunction. It is depicted as metabolic syndrome under stress of pregnancy or failed stress test of pregnancy. Studies and meta-analyses with follow up of up to 40 years have shown increased future risk of HT, cardiovascular disease, stroke, heart failure, myocardial infarction and need of revascularization in ladies with this placentally mediated disease during pregnancy. American Heart Association (AHA) has endorsed that past history of pre-eclampsia or gestational diabetes should be considered as a “major risk factor” for defining future cardiovascular risk. All these ladies should be regularly followed up to detect the development of and treat for high blood pressure, dyslipidemia, diabetes, and obesity. All these ladies should be counselled to quit smoking/tobacco consumption and adopt regular exercise and heart healthy diet.Children born from pregnancies affected by preeclampsia are more likely to suffer from metabolic syndrome, hypertension and cardiovascular diseases at earlier ages.

Aspirin and Prevention of Preeclampsia:

Ladies aging from 20 to 33 years and showing at least one high-risk feature(prior history of preeclampsia, multifetal pregnancies, diabetes, hypertension, kidney disease, autoimmune disease,maternal age over 35 years and elevated body mass index) for the development of preeclampsia when given a small dose of aspirin (60 to 150 mg/day) starting after 12 weeks of

gestation, do show a small but significant risk reduction in preeclampsia incidence, preterm birth, and intrauterine growth retardation. Aspirin receiving ladies with preeclampsia delivered overall higher average birth weight babies. This is achieved without significant increase in risk of placental abruption, postpartum hemorrhage, fetal intracranial hemorrhage or mean blood loss. Aspirin provided no significant benefit for prevention of perinatal death.Beginning aspirin for prevention of preeclampsia after 20 weeks of gestation or for women who have already gestational hypertension does not serve the purpose.

Rationale, Threshold and Goal for High Blood Pressure Treatment:

Due to serious paucity of data, discrepancies exist among various guidelines.

1. **Severe HT (SBP >/= 160 or DBP >/= 110 mm of Hg):** There is good and consistent data that treating BP does reduce maternal complications.

2. **Mild to moderate HT (SBP >/= 140 to 159 or DBP >/= 90 to 109 mm of Hg):** Meta-analysis of 49 randomized trials of treatment versus no treatment in pregnant ladies with either chronic or gestational HT showed no fetal benefit or harm. There was no significant reduction in perinatal mortality or frequency of prematurity, preeclampsia, or abruptio placentae. The only consistent and most conspicuous benefit shown of treating HT was significant (40-60%)decreased incidence of severe HT (NNT 10) and the need for additional anti-HT drugs.

A trial comparing diastolic BP goals of 85 mm of Hg vs 100 mm of Hg in ladies with gestational or chronic HT showed no difference in primary composite endpoints (pregnancy loss or high-level neonatal care for more than 48 hours during the first 28 postnatal days) or secondary endpoints comprising serious maternal complications (death, stroke, eclampsia, blindness, uncontrolled HT, the use of inotropic agents, pulmonary edema, respiratory failure, myocardial ischemia or infarction, hepatic dysfunction, renal failure, and transfusion occurring up to 6 weeks postpartum). Like other trials, less-tight control was associated with a significantly higher frequency of severe maternal hypertension. A very reassuring finding was,there was no maternal or fetal harm with tight control.

Consensus is to treat BP if it is chronic HT as it lasts throughout the pregnancy. While gestational HT with this values may not be treated with medicines unless the lady has some target organ damage or symptoms because of HT.

HT in Pregnancy – Rest, Activity and salt Intake:

Well-controlled chronic HT: Continue moderate exercise in the absence of pregnancy complications. Restricted activity is disruptive for most women and leads to deconditioning, bone loss, and an increased risk of venous thromboembolism.

Preeclampsia in third trimester: Reduced activity (including bed rest) may improve uteroplacental blood flow and prevent exacerbation of HT, particularly if BP is not adequately controlled. There is no evidence that it significantly improves major maternal or fetal outcomes.

A normal diet without significant salt restriction is generally advised, as salt restriction may induce low intravascular volume.

Anti-Hypertensive Medicines Used During Pregnancy:

No antihypertensive medicine is categorized as “Class A” which means there is no medicine for which controlled human studies demonstrated no fetal risk. Most commonly used antihypertensive medicine in pregnancy, α-methyldopa is classified as “Class B”. Rest many medicines (labetalol, β-blockers, calcium channel blocker, and thiazide diuretics) are classified in “Class

C". ACEI, ARB and RAAS blockerdrugs are "Class D" and are contraindicated because they have shown to cause oligohydramnios and neonatal anuria, growth abnormalities, skull hypoplasia, and even fetal death.

Anti-HT Drugs for Breastfeeding Mothers:

Principle is to select the medicine with the lowest transfer into human milk.

Beta-Blockers: Propranolol, metoprolol, and labetalol are less excreted into breast milk. None has been associated with adverse events in infants.Atenolol and acebutolol are relatively extensively excreted into breast milk. No large experience for carvedilol or bisoprolol exists.

Calcium Channel Blockers: Diltiazem, nifedipine, nicardipine, and verapamilare less excreted into breast milk. They are compatible.

Angiotensin Converting Enzyme Inhibitors: Transferred into milk at very low levels. Captopril/ Enalapril are compatible. Hemodynamic status of the infant should be taken into account when deciding. Hypotension, and sequelae such as oliguria and seizures are known.

Diuretics: Theoretically, diuretics may reduce milk volume.

Conclusions:

- Discrepancies do exist for threshold and target due to lack of data
- Maternal/fetal benefits vs harms of lowered BP and potential adverse effects of medicines to the fetus are the chief considerations
- Severely elevated BP level of >/= 160/110 mm of Hg must be treated without doubt, because treatment prevents stroke to mother
- Mild to moderately elevated BP levels of 140-160 and 90-110 mm Hg are grey zone. General consensus is - medicinal treatment is needed for:
  - Chronic HT with BP > 150/95, as it would run through 9 months
  - Early Gestational HT
  - HT with Target Organ Damage (Be careful during 2nd trimester as there is fear of hypotension)
  - Late Gestational HT with BP >160/110. In this situation, benefits to mother/child not proven for lower threshold.
  - M-dopa, Labetalol, NF CR – are the most preferred medicines.

Following table shows oral and injectable doses of various commonly used antihypertensive medicines for emergency as well as chronic use.

Drug	Starting dosage	Maximum dosage
Severe Hypertension[b]		
Hydralazine[c]	5-10mg IV/IM every 30 min or infusion of 0.5-1 mg/h	10mg IV/IM every 30 min
Labetalol	5-20mg IV every 30 min or infusion of 1-2 mg/min	80mg IV every 30 min
Short-acting nifedipine	5-10mg PO every 30 min	10mg PO every 30 min
Mild to moderate hypertension		
Methyldopa	750mg PO loading dose, then 250-500mg PO bid	2000 mg/day in up to 4 doses
Labetalol	100-200 mg PO bid	1200 mg/day in up to 4 doses
Hydralazine	10mg PO bid	200 mg/day in up to 4 doses
Long-acting nifedipine	20-30mg PO od	120 mg/day in 1 dose

CIMS Learning Center

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MANAGEMENT OF HEART FAILURE PATIENTS - THE NEED OF THE HOUR

May 28, 2017 (Sunday)

Course Directors : Dr. Milan Chag / Dr. Dhiren Shah / Dr. Ajay Naik / Dr. Chintan Sheth
Dr. Tejas V. Patel / Dr. Manan Desai

Venue : CIMS Auditorium

Program Overview:

Heart Failure Treatment is the need of hour. Day by day, heart failure patient's are increasing in daily practice . This program is intended to give case-based overview of treatment of any Heart Failure patients and the treatment modalities available.

Program Highlights:

- OPD based management of Heart Failure– When to refer for hospitalization
- New Drugs on the horizon for Heart Failure
- Devices available for Heart Failure Treatment
- Heart Transplant–It's a reality in India
- Chronic Management for Heart Failure patients
- Latest Trials in Medical Treatment for Heart Failure
- Latest in Surgical Treatment for Heart Failure

Registration Fees : 500/- (Non Refundable) | **Spot Registration Fees :** 1,000/- (Non Refundable)

Certificate of attendance will be given at the end of the course

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PROXIMAL FEMUR FRACTURES UPDATE

June 11, 2017 (Sunday)

Course Directors : Dr. Pranav Shah / Dr. Keyur Buch / Dr. Satish Patel / Dr. Rachit Sheth

Venue : CIMS Auditorium

Program Overview:

A variety of implant & treatment options are available for proximal femur fracture treatment (Hip fractures). This course is an opportunity to understand the philosophy, biomechanics and technique of each - including Angle blade plate, Ender's Nails & Primary Hip Arthroplasty. The national level, senior faculty (more than 15 experts) will share their years of experience with tips & tricks and provide a deeper insight in to this unsolved but common fracture.

Program Highlights:

Edited videos to highlight the techniques of

- ABP
- Enders Nails
- Primary THR
- Trochanteric Wiring
- Pearls & Pitfalls from various faculties regarding each implant system
- Interactive sessions & Interesting debates.

Registration Fees : 500/- (Non Refundable) | **Spot Registration Fees :** 1,000/- (Non Refundable)

Certificate of attendance will be given at the end of the course

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