HYPERTENSIVE DISORDERS IN PREGNANCY

Hypertensive disorders in pregnancy

Calcium supplementation should be given to all pregnant women. 500mg of elemental calcium daily with 2-hour gap between iron and calcium intake. Can be started at any gestation but as early as possible.

A. Definitions / terminology:

1. **Pre-hypertension**
   - Women with a blood pressure of 130-139/85-89 mm Hg.
   - Repeat blood pressure after rest (30min – 2 hours), if still pre-hypertensive review in 3 – 7 days otherwise normal follow-up

2. **Pre-eclampsia**
   - A syndrome of new onset of hypertension and either proteinuria or end-organ dysfunction most often after 20 weeks of gestation in a previous normotensive woman and resolves within 6 weeks after delivery. Eclampsia is diagnosed when seizures occur.

3. **Gestational hypertension**
   - Elevated blood pressure first detected after 20 weeks of gestation in the absence of proteinuria or other features of organ dysfunction in a previously normotensive woman.

4. **Chronic Hypertension**
   - Pre-existing hypertension (BP > 140/90) that antedates pregnancy and is present before 20 weeks of gestation.

5. **Pre-eclampsia superimposed on existing hypertension**
   - This occurs on a chronic hypertensive woman who falls pregnant then develops worsening hypertension with new onset of proteinuria or other features of organ dysfunction

6. **Unclassified hypertension**
    - Hypertension in a patient who is seen for the first time after 20 weeks of gestation

B. Diagnosis

1. Blood Pressure

- If systolic BP > 140 taken 4 hours apart
- If diastolic BP > 90 taken 4 hours apart
- An isolated single systolic BP > 160
- A single diastolic BP > 110

2. Proteinuria

- Anything more than trace proteinuria is significant to warrant investigation
- >0.3g from a urine specimen collected over 24 hours or protein/creatinine ratio >0.3

Standard for taking BP

- Use machines validated for use in pregnancy and ensure the provision of sufficient machines.
    - The machine used in South African clinical trials is recommended i.e. the CRADLE VITAL SIGNS ALERT (VSA) has a traffic light algorithm and is robust and cheap.
    - Machines should be regularly calibrated – should be ensured by managers
    - Machine must be robust.
- BP to be taken in the sitting position with legs uncrossed and in relaxed position. The arms should be free of clothing, and arm supported
- If the MUAC > 33cm, a larger cuff size should be used. Current machines available with 2 sizes for adults – adult and obese.
- Level of BP 140/90 mmHg agreed as definition of hypertension.

NB: It is very important to distinguish gestational hypertension from pre- eclampsia which has a different course and prognosis

C. Symptoms and signs that need urgent attention

- Elevated diastolic BP ≥ 110
- Elevated systolic BP ≥ 160
- Severe headache
- Dizziness
- Tinnitus
- Drowsiness
- Agitation

- Restlessness
- Altered mental status
- Visual disturbances(blurred vision, diplopia, scotomata and blindness)
- Dyspnoea
- Retrosternal discomfort
- Epigastric pain
- Nausea
- Vomiting
- Hematemesis
- Oliguria
- Anuria
- Haematuria
- Abruptio
- Fetal distress
- Fetal demise
- Hyper-reflexia

D. Lab findings that indicate urgent delivery

- The general condition and lab findings must be assessed together to decide if delivery is indicated
- Low Platelets (Below 100 x 10^9/l)
- Elevated Creatinine ≥ 96µmol/l or doubling of serum creatinine in absence of other renal disease
- Elevated Urea ≥ 3.5mmol/l – exclude dehydration

E. During antenatal period

1. Take detailed history
   Remember the following risk factors:
   - ✓ First pregnancy
   - ✓ Primipaternity
   - ✓ History of chronic hypertension
   - ✓ Renal disease
   - ✓ Family history of pre-eclampsia
   - ✓ Multiple pregnancy
   - ✓ Diabetes Mellitus
   - ✓ Hydatidiform mole
   - ✓ Hydrops fetalis
   - ✓ Previous pre-eclampsia

2. Risk factors to identify need for early (ideally 12-14 weeks) preventative treatment with aspirin (75-150mg/day)
   - ✓ Prior pre-eclampsia
   - ✓ Chronic hypertension

- ✓ Multiple gestation
- ✓ Pre-gestational diabetes
- ✓ Maternal BMI>35
- ✓ Anti-phospholipid syndrome/SLE
- ✓ Assisted reproduction therapies

3. Clinical examination:
   - ✓ **General examination** (BP, height, weight, thyroid, breasts, chest, CNS CVS)
   - ✓ **Obstetric examination** (SFH, FH, Lie, presentation, position)
   - ✓ **Ultrasound examination** to establish gestational age or EFW as that will influence management plan.

4. Bed side investigation (Urine Dipstix)

5. Come with differential diagnosis

6. Do the following special investigations when admitted :
   - ✓ FBC
   - ✓ Urea and electrolytes
   - ✓ Serum creatinine
   - ✓ AST
   - ✓ ALT
   - ✓ LDH
   - ✓ 24 hours urine collection for proteinuria
   - ✓ Fetal monitoring, if the fetus is viable, every 6 hours. In cases of hypertension or pre-eclampsia with severe features only monitor the fetus once the woman is stable (BP controlled, biochemistry normal, urine output acceptable)

F. Hypertension with 1+ proteinuria without symptoms (BP≥140/90 and < 160/110)

- Admit
- Do 24 hours Daily urine Protein (DUP)
- Start Methyldopa (HyPoTone®) 500mg TDS
- A rescue Nifedipine (Adalat®) 10mg PO (Not sublingually) if SBP ≥ 160 and or DBP ≥ 110 – Always inform the Doctor in charge.
- Do U&E, FBC, Transaminases and LDH
- If DUP is not significant and BP is well controlled, continue drugs and deliver at 38weeks
- Remember to send urine for MC+S

G. Normotensive at 20 weeks but has 1+ proteinuria

- This patient can be managed on an outpatient bases
- Send urine for MC+S

- Do a DUP on outpatient bases
- If DUP is more than 0.3g, then admit for further investigations – Renal Physician
- Check BP twice weekly if all normal

H. Patient admitted with hypertension, symptoms and has proteinuria

- BP ≥ 140/90 with symptoms and signs (Refer page 3 Signs and Symptoms needing urgent attention)
- Start Magnesium Sulphate(Follow MgSO4 Protocol)
- Put in indwelling catheter
- IV Ringers lactate at 80ml/hr maximum
- Call the Obstetrician on standby or the Obstetrician in charge immediately
- Obstetrician will assess the patient as well as the fetal condition(Always individualize patients)
- Do an Ultrasound to check fetal viability, EFW (Expected Fetal weight), AFI, doppler and probable gestational age.
- If GA ≥ 34/40 or EFW ≥ 2200g expedite delivery
- If GA ≥ 26/40 and ≤ 34/40, give steroids 2 doses of Betamethasone (Celestone®) 12mg IMI 24hrs apart. (Or dexamethasone)
- Stabilise patient
- Give Magnesium Sulphate (Per protocol)
- Do CTG every 6 hours and consider expectant management if < 34 weeks
- Deliver patient if there is maternal deterioration or fetal distress. In cases of hypertension or pre-eclampsia with severe features only monitor the fetus once the woman is stable
- TOP is considered if there is maternal organ dysfunction(platelets < 100; creatinine > 100)
- Always remember to exclude Molar pregnancy and Multiple pregnancy

I. Acute severe hypertension (DBP ≥ 110 and or SBP ≥ 160)

- Administer Nifedipine (Adalat®) 10mg per os immediately
- Admit patient
- Start maintenance therapy with Nifedipine (Adalat XL®) 30-60mg BD orally (maximum 120mg/day)
- Aim for DBP ≤ 110 and SBP ≤ 160mmHg
- Start Magnesium Sulphate per protocol if pre-eclamptic
- If BP is still high after 30 minutes, repeat Nifedipine (Adalat®) 10mg orally
- If after 30 minutes BP is still high then give Labetalol (Trandate®) 20mg IVI
- Check BP after 10 minutes if still high, give Labetalol (Trandate®) 40mg and arrange transfer to ICU for probable Labetalol (Trandate®) infusion
- *NB Mother receiving IV Labetalol must be monitored with continuous ECG and BP monitoring, the midwife may administer the first IV dose while the Doctor is en route and an ICU bed is being arranged.*

J. Drug choice

- Nifedipine (Adalat® XL) 30mg daily
- If BP uncontrolled, increase Nifedipine (Adalat® XL) to 30mg BD
- Methyldopa (HyPoTone®) 500mg TDS can be increased to 750mg TDS

K. Side effect profile / Counselling

Educate patient about the possible side effects of the drug(s) used.

Full discussion with patient about condition/implications. Get informed consent

L. Post- partum and future pregnancies

Post- partum stop Methyldopa and start medication patient was using prior to conception if it was chronic hypertension

If patient was normotensive prior to conception and at discharge is still hypertensive, give medication. Post-partum visit must be done within 10 days of discharge

She must be advised to use Aspirin (Ecotrin®, Dispirin CV®) in the next pregnancy.

She should start Aspirin as early as 12 weeks.

Definitions

Term, Acronym or abbreviation	Definition
FH	Fetal Heart
SBP	Systolic Blood Pressure
DBP	Diastolic Blood Pressure
SFH	Symphysis-Fundal Height
GA	Gestational Age
SROM	Spontaneous Rupture of Membranes
EFW	Estimated Fetal Weight
CTG	Cardiotocograph
IUFD	Intrauterine Fetal death
DUP	Daily Urine Protein
MUAC	Mid upper arm circumference

References

1. Adam, S. Soma-Pillay, P. Obstetric Essentials. 2018. 3rd Edition. University of Pretoria. p57
2. Moodley J, Soma-Pillay P, Pattison R. Saving Mothers 2017 Annual Report. Managing Hypertensive Disorders in Pregnancy. p 65
3. A.L. Tranquilli, G. Dekker, L. Magee, J. Roberts, B.M. Sibai, W. Steyn, G.G. Zeeman and M.A. Brown. The classification, diagnosis and management of the hypertensive disorders of pregnancy: A revised statement from the ISSHP. Pregnancy Hypertension: An International Journal of Women's Cardiovascular Health, 2014-04-01, Volume 4, Issue 2, Pages 97-104

Authorship

These guidelines were drafted by a clinical team from Mediclinic and were reviewed by a panel of experts from SASOG and the BetterObs clinical team. All attempts were made to ensure that the guidance provided is clinically safe, locally relevant and in line with current global and South African best practise. Succinctness was considered more important than comprehensiveness.

All guidelines must be used in conjunction with clinical evaluation and judgement; care must be individualised when appropriate. The writing team, reviewers and SASOG do not accept accountability for any untoward clinical, financial or other outcome related to the use of these documents. Comments are welcome and will be used at the time of next review.

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