

# Guidelines for hypertension in pregnancy.

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## Identification of Patients at Risk in Antenatal Clinic (ANC).

1. Age : Pregnant patients of either extremes of age (above 35 years or below 20 years) are particularly vulnerable to develop hypertension in pregnancy.
2. Gravidity: Primigravidae are highly prone to develop hypertension in pregnancy.
3. Multiparous patients with history of hypertension in previous pregnancy should be a suspect.
4. A strong family history of hypertension in other members of the family particularly in blood relations should be kept under surveillance.
5. Patients with past history of renal disease like nephritis may develop hypertension in pregnancy.

Past history of hypertension detected before pregnancy likely are candidates for hypertension in pregnancy.

## Length of Gestation:

Any hypertension detected in first trimester or early second trimester is likely to be due to either essential hypertension, renal hypertension or due to acute immune diseases like systemic lupus erythematosus (SLE). Therefore emphasis in these patient should be laid on carrying out investigations to identify target organ damage of pre-existing hypertension or early onset hypertension.

## Clinical Examination:

A thorough physical examination should be done to look for findings raising the suspicion of hypertension.

1. Obesity - Patients with higher body weight more than acceptable according to the BMI chart should be kept under observation.
2. Pulse - Abnormality of radial pulse particularly disparity between the feel, volume and tension on right side compare to the left may be noted for coarctation of aorta.

3. Measurement of Blood Pressure - Before describing the technique and fallacies of the measurement of blood pressure it is worth while to classify the different types of hypertension in pregnancy and the significance of each one.

### 1. *Pregnancy induced hypertension*

The Criteria for diagnosing PIH are onset of hypertension for the first time after 20 weeks of pregnancy and patients becoming normotensive after delivery.

Significance - PIH is basically due to some derangement in placenta resulting from inadequate trophoblastic invasion of decidual spiral arterioles.

### 2. *Pregnancy Associated Hypertension:*

This is the type of hypertension which is an extension of preexisting hypertension in this pregnancy. Usually this type of hypertension is due to some causes like essential hypertension, renal hypertension, coarctation of aorta or tumours in adrenal medulla like pheochromocytoma.

Significance - Pregnancy associated hypertension with superimposition are eclampsia which is characterised by appearance of proteinuria complicating the hypertension in pregnancy.

### 3. *Transient hypertension:*

This type of hypertension in pregnancy appears in late pregnancy and disappears quite soon. Recently it is suspected that this type of hypertension has long term sequelae like development of essential hypertension.

### 4. *Criteria of hypertension in Pregnancy:*

The internationally accepted criteria of hypertension in pregnancy is 140 mmHg systolic and 90mm Hg or above for diastolic pressure.

## **Recommended technique of measuring the Blood Pressure:**

The posture of the patient is important in measuring the blood pressure. It should be remembered that the blood pressure is lowest in left lateral position. The position of the arm relative to heart should be carefully checked otherwise any deviation from this guideline affects recordings. Each centimetre of vertical height above or below the level of the heart may cause a difference in pressure of 0.7mmHg. Besides this there is a diurnal variation of blood pressure with a circadian rhythm, values being highest in the afternoon and early evening.

One controversial point that needs to be mentioned at this stage of the recommendation is for recording of diastolic blood pressure, that is the Korotkoff's sound. It has been accepted by different observers that for recording of diastolic pressure the fifth sound should be taken as indicator of the diastolic pressure recorded directly from right Brachial artery.

## **Blood Pressure according to the Length of Gestation:**

Normally there is a tendency for lowering of blood pressure both systolic and diastolic in mid trimester and it is further believed that failure of the blood pressure to drop in the mid trimester may be a warning sign for development of hypertension in late pregnancy.

After recording of BP a thorough examination of pregnant uterus should be done to assess the growth of the foetus. Hypertension may be associated with growth restriction of foetus (IUGR).

### *Oedema:*

Testing for oedema should be done near the ankle on the surface of lower end of tibia. Pitting oedema may not be always due to PIH. Quite often it may be due to gravitational cause like prolonged standing. But if the oedema is associated with hypertension and or proteinuria, caution must be exercised to detect PIH at its earliest pos-

sible moment. Generalised oedema may be associated with severe anaemia which is not uncommon in our country.

Before completing the general examination one must not forget auscultating the heart for murmur which may be indicative of preexisting valvular disease or oncoming left ventricular failure (LVF). In cases of severe hypertension auscultation of lungs for moist sounds would be the alarming signals and immediate action should be taken either in FRU or in a hospital to save the patient from pulmonary oedema.

### *Abdominal examination:*

A thorough abdominal examination for height of the fundus, lie of the foetus and presentation must be done specially near term. Symphysial - fundal measurement may raise the suspicion of growth restriction (IUGR) of the foetus. On the other hand unduly enlarged uterus may be suggestive of multiple pregnancy, hydramnios or over-size baby (more than 4kg).

Auscultation of foetal heart completes the abdominal examination. Doppler which is a bed side machine monitors the foetal heart fairly reliably. Finally, role of ultrasound in the management of PIH cannot be over emphasised. Head circumference, abdominal circumference, BPD, liquor status, foetal heart beat, foetal biophysical profile give fairly reliable guidance to foetal wellbeing.

### *Further Action :*

Once the diagnosis of PIH is clinically established the following protocols must be observed in a sequential order.

- a. Arrangements must be made for further investigation and surveillance by admission into an institution or FRU in cases of peripheral centres.
- b. The severity of the PIH has to be assessed by the level of diastolic pressure (100mmHg or more) and systolic BP 160mmHg or more.

- c. A sample of urine must be examined for albumin. If the albuminuria is significant the patient may be managed on a war footing and early delivery may have to be planned.
- d. The next step will be a fundocopy if facilities are available.  
Papilloedema or gross vascular change in the fundus oculi may indicate early termination of pregnancy.
- e. Routine haematological examinations like Hb, blood urea, S. Creatinine, random blood sugar and looking for a platelet count for thrombocytopenia.
- f. If facilities exist a quick ultrasonographic evaluation should be done for the foetal biophysical profile, liquor status (four quadrant measurement of liquor depth giving amniotic fluid index AFI), renders great assistance in deciding on intervention.
- g. A strict protocol for 8 hourly BP record with foetal heart auscultation needs to be instituted.

*Decision regarding induction of labour :*

Terminating the pregnancy by inducing labour must be done strictly on evidence basis and not on intuitive judgement. The points to be noted are as follows.

1. Failure of expectant management with anti-hypertensive drugs as indicated by failure of reduction in diastolic blood pressure.
2. Appearance of proteinuria.
3. Diminished foetal movements.
4. AFI less than 5 or maximum pool depth (MPD) less than one centimeter.
5. Fundoscopic signs of gross vascular change and threatened papilloedema.

*Mode of Induction of Labour :*

A thorough pelvic examination in the operating theatre of obstetric unit taking all aseptic precautions should be done. If the cervix is effaced more than 80% and if the internal os is dilated to 2-3 cm diameter with foetal head not higher than -1 or '0' station, amniotomy should be done immediately provided all precautions had been taken to monitor the foetal heart preferably with doptone.

Liquor should be inspected for presence of meconium. If liquor is thick, scanty and meconium stained, caesarean should be done immediately.

*Further progress after Amniotomy :*

A time period of 3-4 hours must be allowed for development of good uterine contractions (3 contractions in 10 minutes) foetal heart should be auscultated frequently. In case of any bradycardia abnormal cardiac function of foetus must be suspected.

*Oxytocin drip during labour :*

If after 2-3 hours of amniotomy the effective uterine contractions do not set in then 5 units oxytocin (syntocinon) drip at the rate of 20-40 drops per minute should be started with all precautions to monitor the foetal heart.

*Assistance in Second stage of labour :*

With satisfactory descent of the head and appearance of the head at the introitus the patient should be taken to the delivery room. Catheterisation should be done to empty the bladder and a thorough pelvic examination to confirm the establishment of second stage by full dilatation of cervix and making sure about station of the head in the pelvis, must be done and to hasten the second stage and quick delivery with obstetric forceps or episiotomy may have to be undertaken to deliver the baby.

*Care of the New Born :*

Usually these neonates are small for date excepting in patients with other systemic disorders like gestational diabetes mellitus. Every care should be taken to prevent the neonatal complications of hypoglycemia, hypocalcemia, hypomagnesaemia and hyperbilirubinemia. These neonates are best managed in hospitals or institution with all neonatal care facilities.

*Guidelines for Anti hypertensive therapy:*

In mild cases of PIH with 140/90 of BP antihypertensive agents are best withheld. In moderate or severe cases antihypertensive agents must be introduced as it has been proved that control of hypertension in recent years by

these agents has reduced the maternal mortality due to cerebrovascular accidents and pulmonary oedema significantly.

*The popular Antihypertensive agents are -*

1. Alphamethyldopa 250mg to 500mg loading dose and continued 6-8 hourly.

These drugs have slight undesirable effects on foetus by reducing placental perfusion.

2. Calcium channel blockers like nifedipine and nimodipine may be used in 10-40mg dosage schedule per day.

3. For eclampsia, magnesium sulphate is the ideal drug of choice and this drug has set at rest all controversies regarding the choice of anti convulsants in eclampsia.

### **Conclusion :**

PIH is one of the important killers of pregnant mothers and it is almost at the top or second in the list of all of maternal mortality. Therefore every effort must be made to increase the awareness amongst population in reproductive age group about the seriousness and potential unfavourable foetal outcome. Early referral from peripheral centres to FRU or a hospital would save many lives of patients at risk.