HYPERTENSION IN PREGNANCY, 20(1), ix–xiv (2001)

EDITORIAL FROM ISSHP

THE CLASSIFICATION AND DIAGNOSIS OF THE HYPERTENSIVE DISORDERS OF PREGNANCY: STATEMENT FROM THE INTERNATIONAL SOCIETY FOR THE STUDY OF HYPERTENSION IN PREGNANCY (ISSHP)

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The literature relating to classification of the hypertensive disorders in pregnancy and diagnostic definitions of each hypertensive category has been and remains confusing to clinicians and investigators (1). One encounters an assortment of terms and schemes, some quite complex and detailed, and on occasion, the same term (e.g., pregnancy-induced hypertension) is used to include different disorders by various authors. This lack of consensus on classification and diagnosis is one reason for controversies in a variety of areas, including counseling, management, and documenting immediate and remote outcomes. Cognizant of these problems, the Council of the ISSHP appointed a committee to consider these issues, adopting many of their recommendations at the 12th World Congress in Paris, France, in July 2000. The following is a summary of the adopted report.

The first charge to this committee, formed in October 1998, was to monitor the progress of the two working groups that were in the process of updating previous reports, one for the Australasian Society for the Study of Hypertension in Pregnancy (ASSHP) and the other for the National High Blood Pressure Education Program (NHBPEP) in the United States. These have now been published (2,3) and have been considered along with currently published criteria (e.g., the older ISSHP (4), WHO (5), and Canadian Hypertension Society (6) reports).

AUSTRALASIAN SOCIETY CONSENSUS STATEMENT (2)

Definition of hypertension in pregnancy: A systolic blood pressure (BP) $\geq$ 140 mmHg and/or a diastolic BP $\geq$ 90 mmHg (K5), respectively.

Classification: Four categories: preeclampsia, gestational hypertension, chronic hypertension (essential and secondary), and preeclampsia superimposed on chronic hypertension. The definitions are listed:

Preeclampsia: The *clinical* diagnosis is as follows:

- *De novo* hypertension after gestational week 20, and new onset of one or more of the following
- *Proteinuria* ($\geq$300 mg/day or a spot urine protein/creatinine ratio $\geq$ 30 mg/mmol)
- *Renal insufficiency* (creatinine $\geq$ 0.09 mmol/L or oliguria)
- *Liver disease* (raised transaminases and/or severe right upper quadrant or epigastric pain)
- *Neurological problems*: convulsions (eclampsia), hyperreflexia with clonus, severe headaches with hyperreflexia, persistent visual disturbances (scotoma)
- *Hematological disturbances*: thrombocytopenia, disseminated intravascular coagulation, hemolysis
- *Fetal growth* restriction.

Normalization of blood pressure within 3 months postpartum was another requirement.

In making this recommendation, the ASSHP recognized the multisystem nature of the clinical presentation of preeclampsia. However, this group also suggested a *research definition* for investigators, restricted to new onset hypertension after 20 weeks with properly documented proteinuria, stating it will be less sensitive (i.e., miss some preeclamptics) but more specific, ensuring recruitment of true preeclamptics into scientific research studies.

Gestational hypertension: *De novo* hypertension alone, appearing after gestational week 20.

Chronic hypertension: Presence or history of hypertension preconception or in the first half of pregnancy. Considered "essential" if there is no underlying cause or "secondary" if associated with definitive etiology.

Preeclampsia superimposed on chronic hypertension: Development of new signs and/or symptoms associated with preeclampsia after gestational week 20, as above, in a woman with chronic hypertension.

NHBPEP Report (3)

The *definition of hypertension in pregnancy* was identical to that in the Australasian report. Likewise, the *classification* was similar to the Australasian four categories: preeclampsia, chronic hypertension, preeclampsia superimposed on chronic hypertension, gestational hypertension.

Preeclampsia: Preeclampsia is defined as *de novo hypertension after gestational week 20* plus *proteinuria*. The latter is defined as the appearance

of greater than 300 mg/day of urinary protein. They note this will often correlate with 30 mg/dL in a spot urine, but recognizing the problems with spot qualitative dipstick determinations, it states that, if possible, a 24-h or "timed" quantitative determination be sought.

Although hypertension and proteinuria remain the only factors in the determination of preeclampsia in this definition, further guidance is given for clinicians as follows: "In the absence of proteinuria the disease is highly suspect when increased blood pressure appears accompanied by the following symptoms: headache, blurred vision, and abdominal pain, or with abnormal laboratory tests, specifically low platelet counts and abnormal liver enzymes." This is virtually identical to the clinical definition of preeclampsia provided in the ASSHP document (2). Both the NHBPEP and ASSHP no longer recognize an increase of 15 mm Hg and 30 mm Hg diastolic and systolic levels, respectively, with absolute values below 140/90 mm Hg, as hypertension. However, the NHBPEP states that, "Nonetheless it is the collective clinical opinion of this panel that . . . a rise of 30 mm Hg systolic or 15 mm Hg diastolic blood pressure warrants close observation, especially if proteinuria and hyperuricaemia are also present."

Chronic hypertension: As in the ASSHP document, hypertension diagnosed prior to gestational week 20 is considered "chronic" and *de novo* hypertension in late gestation that fails to resolve postpartum (no length of time mentioned) will be reclassified as chronic hypertension. Essential and secondary hypertension are not specifically separated in this classification.

Preeclampsia superimposed on chronic hypertension: This is defined as the appearance of *de novo* proteinuria starting with gestational week 20. A sudden increase in the magnitude of the hypertension, the appearance of thrombocytopenia, and/or abnormal levels of transaminases, and in women who have proteinuria early in gestation, a sudden increase in proteinuria, are labeled as highly likely of superimposed preeclampsia although none of these suggestions are quantified.

Gestational hypertension: Hypertension detected for the first time after midpregnancy, a definition changed to "transient" when pressure normalizes postpartum. This is very similar to the definition of the ASSHP.

THE ISSHP VIEWPOINT

The above considerations show that major consensus statements are moving toward an agreed set of diagnostic criteria for preeclampsia, hypertension, and terminology.

There is really one major difference in these classifications; the problem revolves around an agreed approach to the "inclusive" definition of preeclampsia or else the "restrictive" definition (7). Because preeclampsia is usually an ominous

disorder, it is better to overdiagnose this condition when differentiating between a more benign form of gestational hypertension and preeclampsia, and follow the clinical course as if the patient had the more potentially serious disease. Thus, the Australasians give a very broad new definition reflecting known pathophysiology of the disorder, signaling that it is a *clinical* definition. However, concerned about the specificity of the diagnostic criteria designed for clinicians, they exact a more restricted definition for *research.*

In their unpublished discussions, the NHBPEP working group acknowledged the increased sensitivity of the clinical diagnosis, as defined in the Australasian report. However, believing that anything labeled as "diagnostic" finds its way into research literature, regardless of the number of qualifiers in the document, they opted for one definition followed immediately by cautionary guidelines, for which they use the terms "highly suspect," as discussed earlier.

The ISSHP's Council discussions and recommendations were as follows. The identical classification schemas of the ASSHP and NHBPEP should be adopted, noting that inclusion criteria for each category except preeclampsia were very similar. They further noted that the ASSHP *research* definition of preeclampsia accords with that put forward by the NHBPEP and the Council agreed to adopt this (i.e., *de novo* hypertension after 20 weeks' gestation and properly documented proteinuria) as the ISSHP research definition for preeclampsia.

Finally, the Council took notice of the importance of specificity in diagnosis for such areas as epidemiological surveys and outcome data that are vital to both management of these patients and to counseling them about future pregnancies. They stressed the importance of a concerted research effort to determine if the "restrictive" research criteria need to be broadened to include some or all of the current ASSHP clinical diagnostic criteria.

MEASUREMENT OF BLOOD PRESSURE

The ISSHP endorsed the Australasian suggestions:

1. The pregnant woman should be seated, with feet supported, for 2–3 min.
2. An appropriately sized cuff should be used; the standard if arm has a circumference of 33 cm or less; "large cuff" (15×33 bladder) for larger arms. The cuff bladder should encircle at least 80% of the arm.
3. Systolic blood pressure should be palpated at the brachial artery and the cuff inflated to 20 mm Hg above this level.
4. The cuff should be deflated slowly, at approximately 2 mm Hg per second.
5. Blood pressure should be recorded with a mercury manometer.
6. Systolic and diastolic blood pressure should be recorded, the latter as Korotkoff 5 (disappearance), and K 4 (muffling) only utilized when a phase 5 is absent.
7. Blood pressure is ideally recorded using both arms at the first antenatal visit, and if there is little difference, the right arm should be utilized thereafter. Detection of significant differences requires referral to an expert.

It is currently too early to discuss recommendations regarding automated devices.

MEASUREMENT OF PROTEINURIA

The ISSHP has also endorsed the following:

1. Urinalysis should be a guide for further testing, as it has a high rate of both false positives and negatives; if the dipstick is the only test available, 1+ (30 mg/dL) is often, but not always, associated with ≥ 300 mg/day proteinuria.
2. Abnormal proteinuria is most certain when measured in a timed collection, ≥ 300 mg/day considered abnormal for pregnancy.
3. Spot urine protein/creatinine ratio ≥ 30 mg protein/mmol creatinine is another alternative, superior to qualitative (dipstick) evaluation alone and equivalent to 24-h urine collection (8).

In summary, the ISSHP now endorses the following:

1. A correct method of measuring BP in pregnancy.
2. Proper methods for validating the presence of proteinuria, a key component of the diagnosis of preeclampsia.
3. The classification of hypertension in pregnancy as follows:
   - Preeclampsia–eclampsia
   - Gestational hypertension
   - Chronic hypertension (essential or secondary)
   - Preeclampsia superimposed on chronic hypertension
4. A research definition of preeclampsia as follows:
   - *De novo* hypertension after 20 weeks' gestation, returning to normal postpartum
     AND
   - Properly documented proteinuria, as above
5. Further studies are needed to compare maternal and fetal outcomes when preeclampsia is diagnosed according to an "inclusive" versus "restrictive" approach.

REFERENCES

1. Chapple, L.; Poulton, L.; Halligan, A.; Shennan, A.H. Lack of Consistency in Research Papers over the Definition of Pre-eclampsia. Br. J. Obstet. Gynaecol. **1999,** *106,* 983–985.
2. Brown, M.A.; Hague, W.M.; Higgins, J.; et al. The Detection, Investigation, and Management of Hypertension in Pregnancy. Aust. NZ J. Obstet. Gynaecol. **2000,** *40,* 133–155.
3. Report of the National High Blood Pressure Education Program Working Group on High Blood Pressure in Pregnancy. Am. J. Obstet. Gynecol. **2000,** *183,* S1–S22.

4. Davey, D.A.; MacGillivray, I. The Classification and Definition of the Hypertensive Disorders of Pregnancy. Am. J. Obstet. Gynecol. **1998,** *158*, 892–898.
5. World Health Organisation Group. *The Hypertensive Disorders of Pregnancy*; Technical Report Series No. 758; WHO: Geneva, 1987.
6. Helewa, M.E.; Burrows, R.F.; Smith, J.; Williams, K.; Brain, P.; Rabkin, S.W. Report of the Canadian Hypertension Society Consensus Conference: 1: Definitions, Evaluation and Classifications of Hypertensive Disorders in Pregnancy. Can. Med. Assoc. J. **1997,** *157*, 715–725.
7. Brown, M.A.; Buddle, M.L. What's in a Name? Problems with the Classification of Hypertension in Pregnancy. J. Hypertens. **1997,** *15*, 1049–1054.
8. Saudan, P.J.; Brown, M.A.; Farrell, T.; Shaw, L. Improved Methods of Assessing Proteinuria in Hypertensive Pregnancy. Br. J. Obstet. Gynaecol. **1997,** *104*, 1159–1164.