ISSN: 2581 – 3633
PubMed - National Library of Medicine - ID: 101745081

International Journal of Medical Science and Advanced Clinical Research (IJMACR)

Available Online at: www.ijmacr.com

Volume – 2, Issue – 6, November - December - 2019, Page No. : 241 - 246

Hypertension in pregnancy and its management

[1]Dr Maryam Fatima,[2]Dr Fareeza Sattar,[3]Dr Sidra Yasin

[1]MBBS, Akhtar Saeed Medical and Dental College,Lahore

[2]MBBS, Lahore Medical and Dental College,Lahore

[3]WMO, RHC Dhandhla,Bhakkar

Corresponding Author: Dr Maryam Fatima, MBBS, Akhtar Saeed Medical and Dental College, Lahore

Type of Publication: Original Research Paper

Conflicts of Interest: Nil

Introduction

The most common medical complications of pregnancy is hypertension and its disorder which are an important cause of maternal and perinatal morbidity and mortality worldwide.1 During normal gestation period systolic pressure changes slightly whereas diastolic pressure drops by 10 mm Hg early in 13 to 20 weeks and increases again to pre-pregnancy levels in the third trimester. [1]

The term hypertension in pregnancy is actually a very broad term which has further conditions in which blood pressure varies accordingly. All current definitions and classification schemes have certain pitfalls as they relate to clinical diagnosis and management.

Nevertheless, a recent report by the Working Group on High Blood Pressure in Pregnancy recommended using the classification system proposed by the American College of Obstetricians and Gynecologists even though this classification is not accepted in many countries outside the United States.2

In this review, hypertensive disorders of pregnancy will be divided into three categories: chronic hypertension, gestational hypertension, and preeclampsia (Table 1).

Chronic Hypertension

The incidence of chronic hypertension in gestation women ranges from 1-5%. [3] The rates are higher in older women, obese women, and black women.8 It is difficult to diagnose chronic hypertension in pregnant women who never regularly monitored their blood pressure.

In such cases, the diagnosis is usually based on the presence of hypertension before 20 weeks' gestation. In some women, however, hypertension before 20 weeks' gestation may be the first manifestation of preeclampsia. [4] Furthermore, because of the normal physiologic decrease in blood pressure during the 2nd trimester, majority of women with chronic hypertension have normal blood pressure before 20 weeks' gestation. On the basis of either the systolic or the diastolic blood pressure non-pregnant women and in men, hypertension is often classified as mild, moderate, severe, or very severe. Whereas pregnant women suffering from chronic hypertension are considered either mild or severe. However there is no agreed statement on definition of mild hypertension, there is agreement that a diastolic blood pressure of 110 mm Hg or higher (Korotkoff phase V) set up severe hypertension. [5]

Table 1. Hypertensive Disorders of Pregnancy.

Clinical Finding	Chronic Hypertension	Gestational Hypertension	Preeclampsia
Time of onset of hypertension	<20 Weeks of gestation	Usually in third trimester	≥20 Weeks of gestation
Degree of hypertension	Mild or severe	Mild	Mild or severe
Proteinuria*	Absent	Absent	Usually present
Serum urate >5.5 mg/dl (0.33 mmol/liter)	Rare	Absent	Present in almost all cases
Hemoconcentration	Absent	Absent	Present in severe disease
Thrombocytopenia	Absent	Absent	Present in severe disease
Hepatic dysfunction	Absent	Absent	Present in severe disease

*Defined as ≥1+ by dipstick testing on two occasions or ≥300 mg in a 24-hour urine collection.

The criteria used to diagnose superimposed preeclampsia vary in which the inclusion criteria are exacerbation of hypertension, edema, proteinuria, hyperuricemia, or a combination of these factors. Neither the exacerbation of hypertension nor edema is a reliable indicator of superimposed preeclampsia. If the renal disease is not present the onset of proteinuria (at least 300 mg per 24 hours) is the best indicator of superimposed preeclampsia. [6]

Risks to the Mother and Fetus

Gestation women with chronic hypertension are more prone of facing superimposed preeclampsia and their babies have higher risk for perinatal morbidity and mortality. The complication rate is higher in women who have history of long standing severe hypertension and those with renal disease or preexisting cardiovascular disease when pregnant women have a diastolic pressure of 110 mm Hg or higher during the first trimester fetal and maternal morbidity and mortality are higher than normal. [7] Oppositely, the outcomes of women who are suffering with mild, uncomplicated chronic hypertension during pregnancy and of their babies are similar to those of normal pregnant women. [8]

Gestational Hypertension

Gestational hypertension is explained as the development of high blood pressure without other symptoms of preeclampsia after 20 weeks' gestation in a previously normotensive woman. In some women, gestational hypertension may be an early manifestation of preeclampsia, whereas in others it may be an early sign of unrecognized chronic hypertension. Generally, the outcome gestational hypertension is good without drug therapy. [9]

Preeclampsia

Preeclampsia has been described as the occurrence of hypertension, edema, and proteinuria after 20 weeks' gestation in a previously normotensive woman. The differences between preeclampsia and gestational hypertension are summarized in Table 1. In general, preeclampsia is defined as hypertension plus hyperuricemia or proteinuria, and it is categorized as mild or severe primarily on the basis of the degree of elevation in blood pressure, the degree of proteinuria, or both. Nonetheless, emphasis on either hypertension or proteinuria may minimize the clinical importance of a number of other disturbances in various organ systems. For example, some women with the syndrome of hemolysis, elevated serum liver-enzyme concentrations, and low platelet counts (HELLP) have life-threatening complications. In addition, among women with preeclampsia who later have convulsions (eclampsia), 20 percent have a diastolic blood pressure below 90 mm Hg or no proteinuria. Some women with preeclampsia have symptoms and signs that are mistakenly thought to indicate the presence of other disorders. [10]

Pathophysiology

In preeclampsia, both cardiac output and plasma volume are reduced, whereas systemic vascular resistance is increased. These changes result in reduced perfusion of the placenta, kidneys, liver, and brain. Endothelial dysfunction (resulting in vasospasm, altered vascular permeability, and activation of the coagulation system) could explain many of the clinical findings in women with preeclampsia. [11] Indeed, many of the complications

explained in such women are due primarily to reduced perfusion rather than to hypertensive vascular injury.

Risks of Preeclampsia to the Mother and Fetus

The chief risks to the woman entailed by preeclampsia are convulsions, cerebral hemorrhage, abruptio placentae with disseminated intravascular coagulopathy, pulmonary edema, renal failure, liver hemorrhage, and death. The risks to the fetus include severe growth retardation, hypoxemia, acidosis, prematurity, and death. The frequency of these complications depends on the duration of gestation at the onset of preeclampsia, the presence or absence of associated medical complications, the severity of the preeclampsia, and the quality of medical management. In women with mild preeclampsia who are closely followed, the risk of convulsions is 0.2 percent, that of abruptio placentae is 1 percent, and that of fetal or neonatal death is less than 1 percent. The incidence of fetal growth retardation (birth weight, 10th percentile) is 5 to 13 percent, and that of preterm delivery ranges from 13 percent to 54 percent — depending on the duration of gestation at onset and the presence or absence of proteinuria. [12] Conversely, maternal and fetal or neonatal morbidity and mortality are substantial among women with eclampsia those with the HELLP syndrome and those in whom preeclampsia occurs before 34 weeks' gestation. [13]

Management of Preeclampsia

Early diagnosis, close medical supervision, and timely delivery are the cardinal requirements of the management of preeclampsia; delivery is the ultimate cure. Once the diagnosis is established, subsequent management should be based on the initial evaluation of maternal and fetal well-being. On the basis of the results of this evaluation, a decision is then made regarding hospitalization, expectant management, or delivery, with the following factors taken into account: the severity of the disease process, the status of mother and fetus, and the length of gestation. Irrespective of the management strategy chosen, the ultimate goal must first be the safety of the mother and, second, the delivery of a live infant who will not require intensive and prolonged neonatal care. [14]

Mild Preeclampsia

Mild preeclampsia may aggravate suddenly so therefore women suffering from preeclampsia needs proper monitoring.

The presence of symptoms (such as headache, epigastric pain, and visual abnormalities) and proteinuria increases the risks of both eclampsia and abruptio placentae; women with these findings require close monitoring in the hospital. Outpatient management may be considered if compliance is expected to be good, hypertension is mild, and the fetus is normal. The management should include close monitoring of the mother's blood pressure, weight, urinary protein excretion, and platelet count, as well as of fetal status. In addition, the woman must be informed about the symptoms of worsening preeclampsia. [15] If there is evidence of disease progression, hospitalization is indicated.

There is general agreement that in women with mild preeclampsia and a cervix favorable for induction at term (Bishop's score, 6), delivery should be induced to avoid possible maternal and fetal complications. In contrast, there is no evidence about the management of mild preeclampsia earlier in pregnancy. In particular, there is disagreement about the need for bed rest, prolonged hospitalization, antihypertensive drug therapy, or anticonvulsant prophylaxis.[17] Bed rest, whether at home or in the hospital, is commonly recommended for women with mild preeclampsia.

The purported benefits of bed rest include the reduction of edema, improved fetal growth, prevention of progression to severe preeclampsia, and improved outcomes of pregnancy. In three randomized trials, however, there were no benefits to bed rest at home or in the hospital

among women with mild gestational hypertension, although bed rest at home reduced the number of days of hospitalization. [18] In one trial, however, more women treated at home had progression to severe disease and needed preterm delivery. Moreover, none of these trials were large enough to evaluate the risks of eclampsia, abruptio placentae, and fetal or neonatal death. Minimum randomized trials evaluating drug treatment in women with mild gestational hypertension or preeclampsia remote from term have been reported. In eight of these trials, antihypertensive drug therapy was compared with either no medication or a placebo, and in two trials different antihypertensive drugs were compared. In some trials, the frequency of proteinuria, progression to severe disease, and neonatal respiratory distress syndrome was higher when the women were not treated, but these findings were not confirmed in other trials. The effects of treatment on the duration of pregnancy, on fetal growth, and on the incidence of preterm delivery varied [19]. Therefore, there is no clear statistics to drug treatment in women with mild gestational hypertension or preeclampsia.

Severe Preeclampsia

Severe preeclampsia may be rapidly progressive, resulting in sudden deterioration in the status of both mother and fetus, therefore quick delivery is suggested no matter about the duration of gestation. Prompt delivery is clearly indicated when there is imminent eclampsia, multiorgan dysfunction, or fetal distress or when severe preeclampsia develops after 34 weeks. [20] Early in gestation, however, prolongation of pregnancy with close monitoring may be indicated in order to improve neonatal survival and reduce short-term and long-term neonatal morbidity. In three recent clinical trials in women with severe preeclampsia remote from term, neonatal morbidity and mortality were reduced with conservative management.

Nevertheless, because only 116 women were assigned to conservative management in these trials, and because such management entails risk to the mother and fetus, conservative management must be considered only at tertiary perinatal centers and must include very close monitoring of both mother and fetus. [21] The primary objective of treatment in women with severe hypertension and preeclampsia is to prevent cerebral complications such as encephalopathy and hemorrhage. The threshold for treatment is usually a sustained diastolic blood pressure of 110 mm Hg or higher. Some experts recommend initiating treatment at diastolic blood-pressure values of 105 mm Hg or even lower, whereas others use mean arterial pressure greater than 125 mm Hg as the threshold. [22]

The aim of therapy is to keep the mean arterial pressure below 126 mm Hg (but not less than 105 mm Hg) and the diastolic pressure below 105 mm Hg (but not less than 90 mm Hg). The initial treatment of choice in women who have severe hypertension during the peripartum period is hydralazine given intravenously in 5-mg bolus doses. Because of concern about fetal distress with hydralazine, several investigators have recommended using other drugs to treat severe preeclampsia.

In nine randomized trials in which hydralazine (or dihydralazine) was compared with another drug, only one found that side effects and treatment failure were more frequent in the hydralazine group. [23]

It is important to differentiate among chronic hypertension, gestational hypertension, and preeclampsia. Maternal and neonatal outcomes are usually good among pregnant women who have either mild chronic hypertension or gestational hypertension. In addition, antihypertensive drug therapy may permit such women to continue their pregnancies to term. In contrast, preeclampsia is a unique syndrome of pregnancy that is potentially dangerous for both mother and fetus; it does not respond well to the conventional antihypertensive therapy used in non-pregnant patients. Close medical

supervision and timely delivery are the keys to the treatment of preeclampsia.

Reference

1. National High Blood Pressure Education Program Working Group report on high blood pressure in pregnancy. Am J Obstet Gynecol 1990;163: 1691-712.
2. Hughes EC, ed. Obstetric-gynecologic terminology with section on neonatology and glossary of congenital anomalies. Philadelphia: F.A. Davis, 1972.
3. Management of preeclampsia. Technical bulletin no. 91. Washington, D.C.: American College of Obstetricians and Gynecologists, 1986.
4. Roberts JM, Redman CWG. Pre-eclampsia: more than pregnancyinduced hypertension. Lancet 1993;341:1447-51. [Erratum, Lancet 1993; 342:504.]
5. Davey DA, MacGillivray I. The classification and definition of the hypertensive disorders of pregnancy. Am J Obstet Gynecol 1988;158:892-8.
6. Redman CWG, Jefferies M. Revised definition of pre-eclampsia. Lancet 1988;1:809-12.
7. Zuspan FP. New concepts in the understanding of hypertensive diseases during pregnancy: an overview. Clin Perinatol 1991;18:653-9.
8. Sibai BM. Diagnosis and management of chronic hypertension in pregnancy. Obstet Gynecol 1991;78:451-61.
9. Sibai BM, Akl S, Fairlie F, Moretti M. A protocol for managing severe preeclampsia in the second trimester. Am J Obstet Gynecol 1990;163:733- 8.
10. Ales KL, Charlson ME. The prediction of adverse outcomes in antepartum hypertension. Clin Exp Hypertens [B] 1989;8:95-112.
11. Sibai BM, Abdella TN, Anderson GD. Pregnancy outcome in 211 patients with mild chronic hypertension. Obstet Gynecol 1983;61:571-6.
12. The fifth report of the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure (JNC V). Arch Intern Med 1993;153:154-83.
13. Sibai BM, Anderson GD. Pregnancy outcome of intensive therapy in severe hypertension in first trimester. Obstet Gynecol 1986;67:517-22.
14. Chesley LC, Annitto JE. Pregnancy in the patient with hypertensive disease. Am J Obstet Gynecol 1947;53:372-81.
15. Landesman R, Holze W, Scherr L. Fetal mortality in essential hypertension. Obstet Gynecol 1955;6:354-65.
16. Sibai BM, Villar MA, Mabie BC. Acute renal failure in hypertensive disorders of pregnancy: pregnancy outcome and remote prognosis in thirty-one consecutive cases. Am J Obstet Gynecol 1990;162:777-83.
17. Kincaid-Smith P, Bullen M, Mills J. Prolonged use of methyldopa in severe hypertension in pregnancy. BMJ 1966;1:274-6.
18. Collins R, Peto R, MacMahon S, et al. Blood pressure, stroke, and coronary heart disease. 2. Short-term reductions in blood pressure: overview of randomised drug trials in their epidemiological context. Lancet 1990; 335:827-38.
19. Redman CWG. Controlled trials of antihypertensive drugs in pregnancy. Am J Kidney Dis 1991;17:149-53.
20. Leather HM, Humphreys DM, Baker PB, Chadd MA. A controlled trial of hypotensive agents in hypertension in pregnancy. Lancet 1968;2: 488-90.
21. Redman CWG. Fetal outcome in trial of antihypertensive treatment in pregnancy. Lancet 1976;2:753-6.
22. Arias F, Zamora J. Antihypertensive treatment and pregnancy outcome in patients with mild chronic hypertension. Obstet Gynecol 1979;53:489- 94.

23. Sibai BM, Grossman RA, Grossman HG. Effects of diuretics on plasma volume in pregnancies with long-term hypertension. Am J Obstet Gynecol 1984;150:831-5.