ISSN- O: 2458 - 868X, ISSN–P: 2458 – 8687
National Library of Medicine - ID: 101731606

International Journal of Medical Science and Innovative Research (IJMSIR)
IJMSIR : A Medical Publication Hub
Available Online at: www.ijmsir.com
Volume – 7, Issue – 5, October – 2022 , Page No. : 151 – 156

Gestosis Score as an Early Screening Tool for Prediction of Preeclampsia

[1]Dr. D. Geetha, MD.,DGO.,FICOG., Associate professor, Department of Obstetrics and Gynecology, Government Medical College, Dindigul, Tamilnadu, India

[2]Dr V. Veenashri, MS OG, Assistant Surgeon, Department of Obstetrics and Gynaecology, Government Medical College, Dindigul, Tamilnadu, India

[3]Dr. S. Keerthika, DNB OG, Postgraduate 1st yr, Department of Obstetrics and Gynaecology, Government Medical College, Dindigul, Tamilnadu, India

Corresponding Author: Dr. D. Geetha, MD., DGO., FICOG., Associate professor, Department of Obstetrics and Gynecology, Government Medical college, Dindigul, Tamilnadu, India

Citation this Article: Dr. D. Geetha, Dr V. Veenashri, Dr. S. Keerthika, "Gestosis Score as an Early Screening Tool for Prediction of Preeclampsia ", IJMSIR- October - 2022, Vol – 7, Issue - 5, P. No. 151 – 156.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Background: Hypertensive disorders remain one of the leading member of deadly triad causing maternal mortality, the other two being haemorrhage and sepsis which are preventable. The incidence of hypertensive disorders worldwide is 12%[8]. Preeclampsia, a hypertensive disorder of pregnancy is one of the principal causes of maternal mortality and morbidity and is estimated to complicate pregnancies by 2-8 %[5]. The aim of the study is to estimate the effectiveness of Gestosis score in predicting and prevention of preeclampsia. Gestosis score includes number of maternal risk factors and each risk factor given a score.

Material And Methods : Women >36 weeks who are newly diagnosed or a known case of hypertension attending Dindigul medical college are selected .Gestosis score identified and women are followed up till delivery and also postnatally .

Type of Study: cohort study (Ambispective study)

Results: Incidence of gestational hypertension and severe preeclampsia is higher in extremes of age group. Majority of women who developed severe preeclampsia are primigravida among the risk factors MAP >85 and maternal anaemia, Women with increased BMI and H/O hypertensive disorders in previous pregnancy has higher incidence of GHTN. Incidence of severe preeclampsia is higher in women with gestosis score of more than 3 compared to women with score less than 3.

Keywords: GHTN, MAP, BMI.

Introduction

Preeclampsia is one of the feared complications of pregnancy[1] .Pre eclampsia is a condition which is caused by imbalance between angiogenic and antiangiogenic factors. It is characterised by elevated mean blood pressure and presence of proteins in urine, can progress rapidly to serious complications1& 7.It is multifactorial in origin[2].Several factors are involved in the pathogenesis of preeclampsia. Hence it becomes important to identify the risk factors to prevent complications. Pathogenesis of

preeclampsia involves defective spiral artery remodeling which results in cellular ischemia in the placenta .So there is definite need to screen all patients .But there is no single effective test. Assessment of clinical factors helps in early prediction and prevention. One such screening tool is HDP-Gestosis scoring system .This scoring system involves feasible quantification of maternal risk factors for effective screening of hypertensive disorders of pregnancy. Delivery can resolve most signs and symptoms; however, preeclampsia can persist after delivery, and in some case can develop in the postpartum period[1.] Monitoring of women in postpartum period is also important

HDP – GESTOSIS SCORE

Universal screening by simple risk model has been restructured as **HDP GESTOSIS SCORE**. High risks score 1,2&3 are allotted to each of the clinical risk factor as per its severity in development of HDP. When total score is >/3, pregnant women should be marked as "AT RISK FOR HDP" .T. Aspirin started at a dose of 75 to 150 microgram is started when the score is more than 3 . It can be started as early as 16 weeks.

Risk Factors	Score
Age <19	1
Maternal anaemia	1
Obesity (BMI>30)	1
Primigravida	1
Women born as small for gestational age	1
Family history of CVD	1
PCOS	1
Inter pregnancy interval>5 yrs	1
MAP>85 mmhg	1
Chronic vascular disease (dyslipidemia)	1
Excessive weight gain during pregnancy	1
Maternal hypothyroidism	2
Family history of preeclampsia	2
Gestational Diabetes Mellitus	2
Obesity(BMI>35kg/m2)	2
Multifetal pregnancy	2
Hypertensive disorder in previous pregnancy	2
Pregestational Diabetes Mellitus	3
Chronic hypertension	3
Mental disorder	3
Inherited /Acquired Thrombophillia	3
Maternal Chronic Kidney Disease	3
Autoimmune disease SLE/RA/APLA	3
Pregnancy with ART(OD/Surrogacy)	3

Aim of Study

The main aim of the study is to study the effectiveness of gestosis score as a early screening tool for detection of preeclampsia and thereby its prevention .this study also helps as to estimate the effect of low dose aspirin on the incidence of preeclampsia [4].

Materials and Methods

The study was conducted in Dindigul medical college Hospital from May 2022 to July 2022. Three hundred known hypertensive patients who were admitted in hospital and delivered were selected as cases . Detailed clinical history elicited from patients . Written informed consent was obtained from each patient. Direct questions were asked to record the basic data like age, gravidity, inter pregnancy interval, duration of cohabitation, conceived with ART or not, family history of pre-eclampsia or cardiovascular disease &birth weight of self. ANC records and previous medical records were analysed to detect Hb%, BMI, serum lipid profile, thyroid status, presentational and gestational Diabetes mellitus, chronic Hypertension, mental disease ,chronic kidney disease, history of HDP in previous pregnancy, diagnosed autoimmune disease like SLE, or APLA

Syndrome, MAP, Thrombophilia, PCOS , H/O intake of aspirin in early pregnancy .Subjects are followed up till delivery and postnatally and monitored for signs and symptoms of preeclampsia .

Inclusion and Exclusion Criteria

Women with gestational age >36 weeks and known case of gestational hypertension or newly diagnosed of gestational hypertension are included in the study and women <36 weeks who are not a known case of gestational hypertension are excluded from the study.

Type of Study: Cohort study. Ambispective study. Subjects are questioned about the risk factors and intake of aspirin retrospectively and followed up prospectively during antepartum, intrapartum and postpartum [3].

Table 1: Incidence of GHTN and Severe Preeclampsia in Different Age Groups

Age (In Years)	Incidence of GHTN	Percentage	Incidence of Preeclampsia	Percentage
<18	4	1.33%	1	25%
18-20	50	16%	7	14%
21-25	138	46%	13	9.4%
25-30	77	25.6%	6	7.8%
30-35	25	8.3%	7	28%
>35	6	2%	1	16%
TOTAL	300	100%	35	10
Mean Age(Years)		23.88±4.6		
P-Value		0.0002		

Incidence of gestational hypertension and severe preeclampsia is higher in extermes of age group. There is statistically significant association between age and incidence of preeclampsia (p<0.05).

Table : 2 Incidences of GHTN and Severe Preeclampsia According To Gravida

Gravida	Incidence of GHTN	Percentage	Incidence of Preeclampsia	Percentage
Primi	204	68%	28	80%
Gravida 2	64	21.3%	6	17.2%
Gravida3	24	8%	1	2.8%
Gravida4	4	1.3%	-	-
>Gravida4	4	1.3%	-	-
Total	300	100%	35	100%
P Value		0.586		

Majority of women who developed severe preeclampsia are primigravida .There is no statistically significant association between gravida and incidence of preeclampsia (p>0.05)

Table 3: Incidence of GHTN in Women with Mild Risk Factors (Score 1)

Mild risk factors	Incidence	Percentage
Maternal anemia	223	74%
Obesity	152	50.6%
Cohabitation	-	-
Woman born as small as ga	-	-
Pcos	78	26%
Interpregnancy interval >5 yrs	16	5.3%
Conceived with art	11	3.6%
Map>85	263	87.6%
Chronic vascular disease	-	-
Excessive weight gain during pregnancy	123	41%

Majority of women presenting with MAP >85 followed by maternal anemia has higher incidence of GHTN. Majority of women presenting with MAP >85 followed by maternal anaemia has higher incidence of GHTN. There is statistically significant association between anemia and incidence of preeclampsia .chi- square 97.7 ; p<0.01.

There is statistically significant association between MAP>85mmhg and incidence of preeclampsia (P<0.05).

Table 4: Incidence of GHTN in Women with Moderate Risk Factors (Score 2)

Moderate Risk Factors	Incidence	Percentage
Hypothyroidism	17	5.6%
Family History of Preeclampsia	1	0.3%
GDM	5	1.6%
Multiple Pregnancy	3	1%

Obesity	78	26%
Htn Diseases During Previous Pregnancy	18	6%

Women with increased BMI and H/O hypertensive disorders in previous pregnancy has higher incidence of GHTN.

Women with increased BMI and H/O hypertensive disorders in previous pregnancy has higher incidence of GHTN. There is statistically significant association between increased weight gain and and incidence of preeclampsia chi- square 41.6 ;($p<0.01$).There is statistically significant association between obesity and incidence of preeclampsia chi- square 11.1 ;($p<0.01$).

Table 5: Incidence of GHTN in Women with High Risk Factors (Score 3)

High Risk Factors	Incidence	Percentage
Overt Diabetes	8	2.6%
Chronic Hypertension	12	4
Mental Disorder	-	-
Inherited / Acquired Thrombophilia	-	-
Maternal Chronic Kidney Disease	-	-
Autoimmune Disease	-	-
Autoimmune Disorders	-	-

Table 6: Incidence of GHTN and Preeclampsia in Women with Gestosis Score >3

Gestosis Score	Incidence of GHTN	Percentage	Incidence of Preeclampsia	Percentage
<3	208	71%	11	5.2%
>3	92	29%	35	38%
Relative Risk	0.14			
95% CI	0.0739 To 0.2614			
P-Value	0.0001			

Incidence of severe preeclampsia is higher in women with gestosis score of more than 3 compared to women with score less than 3 . There is statistically significant association between GESTOSIS SCORE and severe preeclampsia ($p<0.05$)

Table 7: Risk Ratio is 7.2

Gestosis Score	Pre-Eclampsia		Total
	+	–	
>3	35	57	92
<3	11	197	208
Total	46	254	300

Risk ratio of women with score >3 developing preeclampsia is 7.2

Table 8: Mode of Delivery

Mode of Delivery	Incidence	Percentage
Labour Natural	226	75%
LSCS	74	24%

Table 9: incidence of preeclampsia in women with aspirin intake

Aspirin intake	incidence of Preeclampsia	
	Present	Absent
Yes	2	12
No	33	153
ODD'S Ratio	0.77	
Confidence Interval	0.165-3.617	
P value	0.371	
Relative Risk	0.81	

There is no statistically significant association between preeclampsia and aspirin intake.

Results

Incidence of gestational hypertension and severe preeclampsia is higher in extremes of age group. There is significant statistical association between maternal age and severe preeclampsia. Women in extremes of age are more prone for preeclampsia.

Majority of women who developed severe preeclampsia are primigravida. But is there is no statistically significant association between gravida and incidence of preeclampsia. Majority of women presenting with MAP >85 followed by maternal anaemia has higher incidence

of GHTN. There is statistically significant association between anemia and incidence of preeclampsia .chi-square 97.7; p<0.01.

There is statistically significant association between MAP> 85mmhg and incidence of preeclampsia (P<0.05).

Women with increased BMI and H/O hypertensive disorders in previous pregnancy has higher incidence of GHTN. There is statistically significant association between increased weight gain and and incidence of preeclampsia chi- square 41.6 ;(p<0.01).There is statistically significant association between obesity and and incidence of preeclampsia chi- square 11.1 ;(p<0.01).

Incidence of severe preeclampsia is higher in women with gestosis score of more than 3 compared to women with score less than 3 . There is statistically significant association between gestosis score and incidence of severe preeclampsia (p<0.05).

There is significant association between intake of aspirin and incidence of preeclampsia p value 0.3

There is no statistically significant association between hypothyroid and and incidence of preeclampsia chi-square 0.4 ;(p value 0.44). There is no statistically significant association between multiple pregnancy and incidence of preeclampsia chi- square1.3;(p value 0.24).

There is no statistically significant association between previous history of hypertension and incidence of preeclampsia chi- square2; p value 0.15.

Conclusion

To conclude higher calorie intake ;less protein intake , anaemia , pre pregnancy high BMI , family history of preeclampsia , extremes of age , increased weight gain during pregnancy are more prone to develop preeclampsia. Gestosis score has significant association with incidence of preeclampsia. Identification of risk factors and estimation of gestosis score in early pregnancy may prevent complications .Women with gestosis score of > 3 need careful monitoring. Regular antenatal checkups and identification of risk factors careful monitoring helps in the prevention of preeclampsia. Low dose Aspirin use and its efficacy in the prevention of preeclampsia requires further research as most of women in this study has not taken aspirin .

References

1. Sarosh Rana[1], Elizabeth Lemoine[2 3], Joey P Granger[4], S Ananth Karumanchi[5 3] Preeclampsia: Pathophysiology, Challenges, and Perspectives PMID: 30920918
2. The International Federation of Gynecology and Obstetrics (FIGO) initiative on pre-eclampsia: A pragmatic guide for first-trimester screening and prevention
3. Abalos E, Cuesta C, Carroli G, Qureshi Z, Widmer M, Vogel JP, et al. Pre-eclampsia, eclampsia and adverse maternal and perinatal outcomes: A secondary analysis of the World Health Organization Multicountry Survey on Maternal and Newborn Health. BJOG. 2014; 121(Suppl 1):14–24.
4. Report of National High Blood Pressure Education Program Working Group on High Blood Pressure in Pregnancy. Am J Obstet Gynecol. Jul 2000; 183(1):S1-S22.
5. ACOG Practice Bulletin No 202: Gestational Hypertension and Preeclampsia. ObstetGynecol 2019; 133: e1.
6. Stella CL, Sibai BM. Preeclampsia: Diagnosis and management of the atypical presentation. J Matern Fetal Neonatal Med. 2006; 19:381–6.
7. Rojas-Arias JL, Ortiz-López LD, Orduña-Aparicio WJ, Quintero-Loaiza CA, AcuñaOsorio E, Franco-Hernández A, et al. Characterization of atypical preeclampsia. Fetal Diagn Ther. 2015; 38:119–25.

8. Hypertension in Pregnancy. American College of Obstetricians and Gynecologist (2013b) Criteria for severe preeclampsia; 2013.
9. Henderson JT, Whitlock EP, O'Conner E, et al. Low Dose Aspirin for the Prevention of Morbidity and Mortality from Preeclampsia. A Systematic Evidence Review for the U.S. Preventive Services Task force Rockville: Agency for Healthcare Research and Quality (US) 2014.
10. A. Atallah, E. Lecarpentier, F.Goffinet, M.Doret Dion,P.Gaucherand,V.Tsatsaris,Aspirin for Prevention of Preeclampsia,Drugs (2017) 77:1819–1831
11. Zhu J, Huang R, Zhang J, Ye W, Zhang J. A prophylactic low-dose aspirin earlier than 12 weeks until delivery should be considered to prevent preeclampsia. Med Hypotheses. 2018 Dec;121:127-130.
12. Hofmeyr G, Lawrie TA, Atallah ÁN, Torloni M. Calcium supplementation during pregnancy for preventing hypertensive disorders and related problems. Cochrane Database of Systematic Reviews 2018, Issue 10.