Assessment of the Effects of Pregnancy-Induced Hypertension upon Pregnant Women and Their Pregnancy Outcome in Erbil City

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الخلاصـــة:

الهدف: أجريت دراسة وصفية تحليلية للأمهات الحوامل المصابات بفرط ضغط الدم خلال الحمل واللواتي ولدن في مستشفى الولادة في مدينة أربيل لغرض التعرف على تأثير فرط ضغط الدم خلال الحمل على الأمهات ونتاج حملهن.

المنهجية: تمّ اختيار عينة عمدية من مائة حامل مصابة بفرط ضغط الدم خلال الحمل كمجموعة تجريبية (الدراسة) ومائة أخرى من الأمهات ذوات الحمل الطبيعي كمجموعة ضابطة وتمّ اختيارهن من ردهة الطوارئ وردهات النسائية وصالة الولادة في مستشفى الولادة في مدينة أربيل، تمّ جمع المعلومات باستخدام الاستمارة الاستبانية عن طريق المقابلة ومراجعة طبلة أفراد العينة للمجموعتين التجريبية والضابطة.

النتائج: أظهرت النتائج أنّ تأثير فرط ضغط الدم خلال الحمل على نتاج الحمل كانت: (20.2%) كرب الجنين، (13.4%) مبتسر، (9.6%) متلازمة كرب التنفس، (8.7%) قلة السائل السلي، (6.7%) موت الوليد (6.7%) تأخر نمو الجنين و(6.7%) الملاص. كما أظهرت النتائج أنّ تأثير فرط ضغط الدم خلال الحمل على الأم كانت: (65%) اضطرابات الرؤية، (16%) فشل إحداث الولادة، (8%) انفصال السخد المبكر، (6%) نزف بعد الولادة، (4%) الاختلاجات و(2%) ضيق التنفس.

الاستنتاج: بالرغم من العناية خلال الحمل والرقود في المستشفى للحوامل المصابات بفرط ضغط الدم خلال الحمل، يبقى فرط ضغط الدم يهدد حياة الأم والوليد.

التوصيات: تثقيف الأبوين من خلال حملات التوعية بأهمية العناية خلال الحمل وتوفير مطبوعات لزيادة وعي الأمهات المعرضات للخطورة وتحسين معلومات الفريق الصحي وخاصة الممرضة لأخذ الدور القيادي في تنفيذ التثقيف الصحي للأمهات المعرضات للخطورة

Abstract:

Objective: A descriptive analytical study was conducted on pregnant women who have pregnancy-induced hypertension (PIH) and were delivered in Maternity Hospital at Erbil City, in order to identify the effects of PIH upon pregnant women and their pregnancy outcome.

Methods: A purposive sample of one hundred pregnant women who had PIH, as study group and one hundred normal pregnant women, as control group was selected from the emergency, obstetric wards and delivery room of Maternity Hospital in Erbil City. The data were collected by using a questionnaire format through interviewing and reviewing the records of both groups (study and control group).

Results: The study result shows that the effects of PIH upon pregnancy outcome were include: (20.2 %) Fetal distress, (13.4 %) Prematurity, (9.6 %) Respiratory distress syndrome, (8.7 %) Oligohydramnios, (6.7 %) Neonatal death, (6.7 %) IUGR and (6.7 %) Stillbirth. Also the effects of PIH upon mother were include: (65 %) Visual disturbance, (16 %) Failure induction, (8 %) Abruptia placenta, (6 %) Postpartum hemorrhage, (4 %) Convulsion and (2 %) Dyspnea.

Conclusion: In spite of antenatal care and hospitalization, still PIH threat the mother's and baby's life.

Recommendation: Education of parents concerning the importance of prenatal care through mass media and provides published materials to increase awareness of PIH disorder for mothers with high risk pregnancy, and improve health team knowledge especially nurses to take leader role in implementing health education regarding high risk pregnancy (PIH).

Key words: Pregnancy-induced hypertension (PIH), Pregnancy Outcome.

Introduction:

World wide an estimated 600,000 women die every year as a result of pregnancy-related causes, with 99% of these deaths occurring in developing countries. Preeclampsia and eclampsia type of pregnancy induced hypertension (PIH) probably account for more than 50,000 maternal deaths a year. In place where maternal mortality is high, most of these deaths are associated with eclampsia, when maternal mortality is lower, a higher proportion will be due to preeclampsia and eclampsia, these together accounts for 15% of direct maternal death,

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with two-thirds related to preeclampsia [1]. Preeclampsia continues to be a major health problem. It is a leading cause of maternal mortality in developed countries and is associated with a five fold increase in perinatal mortality. The incidence of preeclampsia is about 10%, but it varies among different populations [2].

Women who experience PIH are at risk for adverse outcomes, the rate is depending on the severity of the disease as well as gestational age at the time of disease onset and at delivery [3].

The risk of adverse effect of PIH has been recognized for a long time, and a bewildering array of medical and surgical regimens have been proposed or used for the prevention and treatment of PIH [4].

Despite extensive advances in obstetric research and clinical implementation, PIH remains one of the leading causes of maternal and fetal morbidity and mortality. It would be advantageous to diagnosis PIH before its clinical manifestation, because prevention or delay of the onset of this disease would have a significant impact on maternal and prenatal outcomes [5].

The importance of prompt diagnosis and appropriate management lies in the prevention of rapidly worsening maternal hypertension with the subsequent risk of cerebral hemorrhage, eclamptic fits or placental separation as well as those of fetal hypoxia [6].

This study try to detect the effects of PIH upon the mother during pregnancy, delivery, postpartum (hospitalization time) and to assess the effects of PIH upon the pregnancy outcome in Erbil City-Iraq.

Methodology:

A descriptive analytical study was conducted on pregnant women who have pregnancy induced hypertension (PIH) and delivered in hospital, in order to identify the effects of PIH on pregnant women and their pregnancy outcome.

The study was conducted at Maternity Hospital in Erbil City which serves large area of population with 300 beds. The samples were taken in emergency, obstetrical maternity wards and delivery room. The most of sample were in emergency ward.

Non probability (purposive) sample consisted of one hundred (100) pregnant women with (PIH) who admitted in Maternity Hospital in Erbil City during the period 27th Feb. to 10th April 2005. The sample was derived from emergency department, delivery room and obstetrical wards of maternity hospital, and one hundred (100) normal pregnant women as control group which was employed in this study.

The instrument was designed and constructed by the investigator after reviewing related literatures, clinical background and previous studies. A pilot study was conducted on ten pregnant women who hospitalized and delivered in maternity hospital during the period from 1st to 10th, Feb. 2005. These sample was excluded from the original sample of the study. For testing the validity of the interview questionnaire form, the investigator presented it to 20 experts in different fields. They were included thirteen nursing faculty and three obstetrician and gynecologist, one pediatrician, one medical physician. For purpose of measuring the reliability of the questionnaire form, the investigator applied internal consistency through the correlation coefficient computed on split-half technique; a measure tends to underestimate systemically the reliability of the entire scale for neonatal and maternal outcomes. In the present study, data processing in IBM computer using Statistical Package of Social Sciences (SPSS) for analysis and application of statistical procedures which included:

I-Descriptive statistics

II- Inferential statistics (Chi–square)

Results:

Table 1. Distribution of the study and control according to demographic and socioeconomic characteristics

Variables	Study (PIH) group n = 100		Control group n = 100		χ^2 value	p-value	df	level of significant
	No.	%	No.	%				
Age of mother (year)								
< 20	9	9 %	9	9 %				
20 – 24	27	27 %	30	30 %				
25 – 29	21	21 %	30	30 %	36.02	0.07	25	NS
30 – 34	17	17 %	21	21 %				
35 – 39	18	18 %	8	8 %				
> 40	8	8 %	2	2 %				
$\bar{X}$	28.02 ± 6.96		26.50 ±5.67					
Residency								
urban	62	62 %	78	78	0.032	0.858	1	NS
rural	38	38 %	22	22				
Level of education								
Illiterate	63	63 %	41	41 %				
Read and write	10	10 %	15	15 %				
Primary school graduated	14	14 %	28	28 %				
Intermediate school graduated	5	5 %	8	8 %	19.12	0.79	25	NS
Secondary school graduated	5	5 %	2	2 %				
College and higher education	3	3 %	6	6 %				
Occupation								
house wife	54	54 %	69	69 %	0.13	0.65	1	NS
government employ	46	46 %	31	31 %				
Socioeconomic status								
low	90	90 %	82	82 %				
moderate	8	8 %	16	16 %	0.74	0.94	4	NS
high	2	2 %	2	2 %				
Total	100	100%	100	100 %				

df= degree of freedom, No.= number of mothers, NS= Non significant, p-value= probability level, χ^2= chi-square, %=percentage

Table (1) shows that the highest percentage (27 %) in study group their age was ranged between (20–24) years, while in control group the highest percentage (30 %) their age were ranged between (20–24), (25–29) years respectively. Regarding the residency, the highest percentage were (62 %), (78%) in both groups (study group and control group) respectively were living in urban area. Regarding the level of mothers' education, the highest percentage (63% and 41%) respectively in both groups (study and control group) was illiterate.

Regarding the occupation of mother, the highest percentage (54% and 69%) respectively in both groups (study group and control group) was housewife.

Also, this table shows the highest percentage (90 %, 82 %) respectively in both groups (study and control group) had low socioeconomic status. There is no significant difference between study and control group regarding age, residence, level of education, occupation and socioeconomic status

Table 2. Variables regarding PIH among study group

Variables	Study (PIH) group n = 100	
	No.	**%**
Type of PIH		
- Gestational hypertension	4	4 %
- Mild preeclampsia	29	29 %
- Sever preeclampsia	54	54 %
- Eclampsia	13	13 %
Time of onset of PIH		
- 20–25 weeks	31	31 %
- 26–30 weeks	14	14 %
- 31–35 weeks	14	14 %
- 36–40 weeks	41	41 %
MAP * during admission		
- Normal	7	7 %
- Abnormal	93	93 %
MAP * immediate after delivery		
- Normal	61	61 %
- Abnormal	39	39 %
Total	100	100 %

MAP: Mean Arterial Pressure (Normal value= 70- 110 mmHg), No. = number, %=percentage

Table (2) shows the highest percentage (54 %) of the sample had severe preeclampsia and the lowest percentage (4 %) of sample had gestational hypertension.

Also, this table shows that the highest percentage (41 %) of the sample their onset of PIH ranged from 36–40 weeks of gestation, while the lowest percentage (28 %) of them ranged from 26–35 weeks of gestation.

The same table shows that the highest percentage (93 %) of the sample had abnormal MAP, while the lowest percentage (7 %) had normal MAP on admission.

The same table shows that the highest percentage (61 %) of the sample had normal MAP, while the lowest percentage (39 %) had abnormal MAP immediately after delivery

Table 3. The effects of PIH upon fetus in both groups (study sample and control group)

Effects of PIH upon fetus	Study (PIH) group n = 104*		control group n = 100	
	No.	%	No.	No.
A- Fetal health condition				
- Normal	68	65.3 %	98	98
- Abnormal	36	34.6 %	2	2
Total	104	100%	100	100
B- Type of abnormal health condition**				
- I.U.G.R	7	6.7 %	0	0
- Fetal distress	21	20.2 %	2	2
- Oligohidramnios	9	8.7 %	0	0
- Stillbirth	7	6.7 %	0	0
- Polyhydramnios	1	0.9 %	0	0

No.= number, %=percentage
*** For study sample delivered twin**
**** More than one answer.**

Table (3) shows that the highest percentage (65.3 %) of the study sample had fetus with normal health condition, while the lowest percentage (34.6 %) had fetus with abnormal health condition (such as: IUGR, fetal distress, oligohydramnios, polyhydramnios and stillbirth). In control group the majority of them had newborn with normal health condition.

Table 4. The effects of PIH upon newborn baby in both groups (study sample and control group)

Effects of PIH upon newborn baby	Study (PIH) group n = 104*		control group n = 100	
	No.	%	No.	%
A- Newborn health condition				
- Normal	63	58.7 %	98	98%
- Abnormal	41	41.3 %	2	2%
Total	104	100%	100	100%
B- Type of abnormal health condition**				
- Prematurity	14	13.4 %	0	0 %
- Respiratory distress	10	9.6 %	2	2 %
- Neonatal death	7	6.7 %	0	0 %
- Asphyxia	5	4.8 %	0	0 %
- low birth weight	6	5.7 %	0	0 %
- congenital abnormalities	2	1.9 %	0	0 %

No.= number, %=percentage
*** For study sample delivered twin. ** More than one answer**

Table (4) shows that the highest percentage (58.7 %) of newborns in study group had normal health condition, while the lowest percentage (41.3 %) had abnormal health condition

normal health condition, while the lowest percentage (41.3 %) had abnormal health condition (such as: prematurity, respiratory distress, neonatal death, asphyxia and low birth weight). In control group the majority of them had newborn with normal health condition.

Table 5. The effects of PIH upon mother during pregnancy, delivery and immediate postpartum among study sample

Effects of PIH upon mother during pregnancy , delivery and immediate postpartum	Study (PIH) group n = 100	
	No.	%
A- Mother health condition during pregnancy		
- Normal	48	48 %
- Abnormal	52	52 %
Total	100	100%
B- Type of abnormal health condition during pregnancy**		
- impaired renal function	2	2 %
- convulsion	13	13 %
- visual disturbance	65	65 %
- numbness	1	1 %
- impaired listening	1	1 %
- palpitation	1	1 %
- pulmonary edema	1	1 %
- dyspnea	11	11 %
- abruptio placenta	8	8 %
- coma	2	2 %
C- Mother health condition during delivery		
- Normal	82	82 %
- Abnormal	18	18 %
Total	100	100%
D-Type of abnormal health condition during delivery**		
- induction failure**	16	16 %
- prolong third stage of labor	1	1 %
- rupture of uterus	1	1 %
- prolonged labor	2	2 %
E- Mother health condition immediate after delivery		
- Normal	78	78 %
- Abnormal	22	22 %
Total	100	100%
F- Type of abnormal health condition immediate after delivery		
- Convulsion (empeding ecalmpsia)	4	4 %
- visual disturbance	5	5 %
- Post partum hemorrhage	6	6 %
- Impaired renal function	1	1 %
- Tongue edema	1	1 %
- Unconsciousness	2	2 %
- Dyspnea	2	2 %
- Anemia	1	1 %

** More than one answer

Table (5) indicates that the highest percentage (52 %) of the sample had abnormal health condition during pregnancy (such as: visual disturbance, convulsion, dyspnea, abruptia placenta, impaired renal function, numbness, impaired listening, palpitation and pulmonary edema) while the lowest percentage (48 %) had normal health condition.

The same table shows that the highest percentage (82 %) of the mothers had normal health condition, while the lowest percentage (18 %) had abnormal health condition during delivery (such as: failure induction, prolonged labor and rupture of uterus).

The same table shows that the highest percentage (78 %) of the sample had normal health condition, while the lowest percentage (22 %) had abnormal health condition after delivery (such as: postpartum hemorrhage, visual disturbance, dyspnea, convulsion, unconsciousness, anemia and impaired renal function). In control group, the majority of them had normal health during pregnancy and labor only (4%) of them had prolonged labor.

Discussion:

As shown in table (1), the mean age in the study is 28.02± 6.96 years old which is consistent with the study of Marco and others (1985) who stated that the mean age in PIH group was 28 years old [7].

Also, result is consistent with the result of a study conducted by MOH which found that the age group 20–34 years was 55% from 23105 of women in survey population [8].

Bassam and other (2000) reported that the mean age of 64 mothers that complicated by PIH and finally HELLP syndrome was 24 years [9].

The age 35 years old and above was considered high risk group for maternal morbidity and mortality due to medical and obstetrical complications during pregnancy and childbirth [10].

A study has found that there is a significant difference in the maternal age at delivery was noted between groups, with a slightly higher mean at maternal age of 29.1 years in the group with PIH compared with 24.3 years in the normal group [11].

The result indicates that (34.6 %) percentage had fetus with abnormal health condition (such as: IUGR, fetal distress, oligohydramnios, polyhydramnios and stillbirth). In control group, the majority of them had newborn with normal health condition.

Oligohydramnios could be prevented by more widespread use of prenatal care, education of primary medical care personnel, prompt diagnosis of high-risk patients and timely referral to tertiary medical centers [12].

It was conducted in a study on polyhydramnios and associated maternal and fetal complications in singleton pregnancies, there was a significantly increase rate of perinatal mortality among PIH [13].

It was reported that one third of fetus were IUGR in PIH women [14].

The highest percentage (58.7 %) of newborns in study group had normal health condition while the lowest percentage (41.3 %) had abnormal health condition (such as: prematurity, respiratory distress, neonatal death, asphyxia and low birth weight). In control group, the majority of them had newborn with normal health condition.

A large population-based study confirms and quantifies the magnitude of excess risk of small for gestational age and stillbirth among births to women with hypertensive disease in pregnancy [15].

More stillbirths and neonatal deaths showed a tendency to be associated with the severe form of preeclampsia, as compared with the mild form. Stillbirth and neonatal deaths appear to be associated with women who had no/or irregular antenatal care [16].

Preeclampsia increases the risk of intrauterine growth restriction and low birth weight. Close medical attention including more prenatal visits, might possibly reduce the risk of preterm birth and prolong the duration of gestation [17].

It was found that there was significantly high frequency of low birth babies among

PIH mothers [18].

PIH was associated with a 3.8 fold increased risk of low birth weight. Women with PIH were 3.6 times more likely to deliver a newborn with SGA as compared with normotensive women. There was a strong relationship between PIH and restricted fetal growth [19].

PIH is one of obstetric and medical complication that leads to asphyxia of newborn and more than half of neonates of PIH mothers had respiratory distress syndrome [14].

However, the mortality rate and the need for mechanical ventilation and neonatal intensive care were greater in PIH group as compared with normotensive pregnant women [12].

In women who have gestational hypertension or preeclampsia, increased rates of preterm delivery and delivery of SGA newborns are present only in those with severe hypertension [20].

It was concluded that there is a significant association of preeclampsia and gestational hypertension with large-for-gestational age infants, in addition to a significant association with low-birth-weight and SGA infants [17].

In severe preeclampsia, neonatal morbidity and mortality are related to gestational age rather than to the presence or absence of the HELLP syndrome. Expectant management improved neonatal outcome with advanced gestational age in all groups [17].

Respiratory distress syndrome was inversely related to GA at delivery and directly related to CS, while survival was directly related to birth weight and inversely related to IUGR. Early onset of preeclampsia and eclampsia leading to early intervention are a major determinant to perinatal outcome and prematurity.

The results indicate that the highest percentage (52 %) of the sample had abnormal health condition during pregnancy such as visual disturbance, convulsion, dyspnea, abruptia placenta, impaired renal function, numbness, impaired listening, palpitation and pulmonary edema, while the lowest percentage (48 %) had normal health conditions as shown in table (5).

The same table shows that the highest percentage (82 %) of the mothers had normal health condition, while the lowest percentage (18 %) had abnormal health condition during delivery such as failure induction, prolonged labor and rupture of uterus.

The same table shows that the highest percentage (78 %) of the sample had normal health condition, while the lowest percentage (22 %) had abnormal health condition after delivery such as postpartum hemorrhage, visual disturbance, dyspnea, convulsion, unconsciousness, anemia and impaired renal function.

In control group, the majority of them had normal health during pregnancy and labor and after delivery, only (4%) of them had prolonged labor.

The incidence of abruptia placenta in women with hypertensive disease of pregnancy reaches upwards of 10 % depending on the severity of the underlying disease process [14].
The convulsion more than occurred in the antenatal period as compared with delivery and postpartum

It was reported that more than half of sample (women with severe preeclampsia) experienced morbidity that included abruptia placenta, renal insufficiency, HELLP syndrome and eclampsia

Renal impairment associated with PIH was associated with a high incidence of perinatal mortality,

Severe preeclampsia is the category with the highest estimated CPP (cerebral perfusion pressure) and predicts an increased likelihood of cerebral dysfunction

Eclamptic women have lower rates of successful induction than non eclamptic women at all GA. Induction success increases markedly in eclamptic women and to lesser extent in non-eclamptic women with advancing GA. This may reflect a tendency among the earlier GA to discontinue and induction in the presence of eclampsia [14].

Delivery is always appropriate therapy for the mother, but may not be so for the fetus. For maternal health, the goal of therapy is to prevent eclampsia as well as other severe complications of preeclampsia. These disorders are completely reversible and usually begin to abate with delivery. In women with severe preeclampsia before 25 weeks of gestation, delivery is associated with minimal short-term maternal morbidities [11].

Current obstetric treatment in the United States has resulted in a shift of eclampsia toward the postpartum period, with most cases being seen as late postpartum. To reduce the rate of late postpartum eclampsia, efforts should be directed to the education of the health care providers and patients regarding the importance of prompt reporting and evaluation of symptoms of preeclampsia during the postpartum period [8].

Recommendations:

The study findings and conclusions lead to the following recommendations:

1. Application of significant advanced clinical investigations routinely to all pregnant women for screening purposes.
2. Emphasis should be placed on regular checkup for blood pressure changes and an examination to detect edema, excessive weight gain, as well as the development of the symptoms of headache, blurred vision, epigasteric pain or right upper quadrant pain.
3. Pregnant women should be encouraged to attend ANC and regular visits to check up and follow-up for early detection of any abnormalities.
4. Parents should be educated concerning the importance of prenatal care through mass media, and provide for mothers with high risk pregnancy published materials (booklet), to increase their awareness toward PIH disorder.
5. Improvement of educational programs for urban and rural area regarding signs and symptoms of PIH and its effects.
6. Initiation of collaborative work between the ministry of health and the ministry of higher education on antenatal care for high risk women in order to be included in the curriculum of the high technical institutes and nursing collage.
7. Improvement of health personnel knowledge specifically for nurses to enable them to take their role in teaching and giving advice and instructions through perinatal care and encouraging them to take a leader role in implementing health education regarding high risk pregnancy (PIH).
8. More studies should be conducted on regarding the evaluative quality of ANC and the long term effects of PIH upon the mothers.

References:

1. Anonymous; The Magpie Trial Collaborative Group: Do women with Preeclampsia, and their babies, benefit from magnesium sulphate? **THE LANCET**, 2002, 359 (9321): P.1877.

2. Xiao, Y.; Hannele, L.; Jeffrey, C.; Olavi, Y.; Baha, M.; Wolfang, H. and Sinuhe, H.: Elevation of Both Maternal and Fetal Extracellular Circulatory Deoxyribonucleic Acid Concentrations in the Plasma of Pregnant Women with Preeclampsia. **AJOG,** 2001, 183 (8), P.414.

3. Michael D., Baha M., Sibai, Steve C, John H., Marshall D., Cora M., J. Peter, Mark L., Menachem M., Richard :, Paul M., Gary T., Mitchell D. : Perinatal outcome in women with recurrent preeclampsia compared with women who develop preeclampsia as nullporous. **AJOG**, 2002, 186 (3), P.422.

4. Murry, E.; Marc, J.; Keirse, J.; Caroline, C.; Leila, D.; Ellen, H. and Justus, H.: **A guide to Effective Care in Pregnancy and Childbirth**. 3rd edition, Oxford University Press, 2000 : P.P. 119-120.

5. Craig T., Hong H., Wen C., Ronald J. and Donald S.: Low Maternal Serum Levels of Placenta Growth Factor as an Antecedent of Clinical Preeclampsia. **AJOG**, 2001, 184 (6), P.P.1267.

6. Mgelder: **Reproduction, Obstetrics and Gynecology**. M G Elder, 1988: P.P.125-130.

7. Marco, M.; Chiara, B.; Elisabetta, B.; Giro, T. and Giovanni, G.: Immune Complexes in Preeclampsia and Normal Pregnancy. **AJOG**, 1985, 152 (5), P.579.

8. Al-Dawodi K.: Child Health Mortality: An Appraisal of Problems and Potentials. **Unpablished Doctorate Dissertation**, Collage of Nursing, University of Baghdad, 2000, P.35.

9. Bassam, H.; John, R.; Jeffrey, G.; Rabin, C. and Baha, M.: HELLP Syndrome Versus Severe Preeclampsia: Onset at ≤28 Week's Gestation, **AJOG**, 2000, 183 (6), P.1477.

10. Dickason, E.; Silverman, B. and Schalt, M.: **Maternal–Infant Nursing Care**. 2nd ed., New York, Mosby, 1994: P.P.587-599.

11. John, F.; Dhirendra, N. and James, M.: Maternal Plasma Leptin is Increased in Preeclampsia and Positively Correlates with Fetal Cord Concentration. **AJOG**, 1999, 180 (3), Part 1, P.732.

12. Aslan, H.; Gul, A. and Cebeci, A.: Neonatal Outcome in Pregnancies after Preterm Delivery for HELLP syndrome. **Gynecol Obstet Invest**., 2004, 58 (2), P.P.96-9.

13. Desmedt, E.; Henry, O.; Beischer, A.: Polyhydramnios and Associated Maternal and Fetal Complications in Singleton Pregnancies. **BJOG**, 1990, 97 (12):P.P.1115-22.

14. Andrew, J.; Paul, A.; John, A. and James: Acute Renal Failure Complicating Severe Preeclampsia Requiring Admission to an Obstetric Intensive Care Unit. **AJOG**, 2002, 186: P.P.253-6

15. Allen, V.; Joseph, K.; Murphy, K.; Magee, L. and Ohlsson, A.: The Effect of Hypertensive Disorders in Pregnancy on Small for Gestational Age and Stillbirth: A Population-Based Study. **BMC Pregnancy Child Birth**, 2004, 4 (1): P.7.

16. Al-Mulhim, A.; Abu-Heija, A.; Al-Jamma, F. and El-Harith, el-Ha.: Preeclampsia: Maternal Risk Factors and Prenatal Outcome. **Fetal Diagn Ther**., 2003, 18 (4): P.P.275-80.

17. Xu X.; Daman, M.; Nestor, D.; David, M.; Sandra, T.; Christine, N. and Duncan, S.: Impact of Pregnancy-induced Hypertention on Fetal Growth. **AJOG**, 1999, 180 (1): P.207.

18. Mekbeb, T. and Ketsela, K.: Preeclampsia/Eclampsia at Yekatit 12 Hospital, Addis Ababa, Ethiopia (1987-1989). **East A fr Med J**., 1991, 68 (11): P.P.893-9.

19. Xiao, R.; Sorensen, T.; Williams, M. and Luthy, D.: Infeluence of Preeclampsia on Fetal Growth, **J Matern Fetal Neonatal Med**., 2003, 13 (3): P.P.157-62.

20. Buchbinder, A.; Sibai, M.; Caritis, S.; Macpherson, C.; Hauth, J.; Lindheimer, D.; Klebanoff, M.; Vandorsten.,P.; Landon, M.; Paul, R.; Miodovnik, M.; Meis, P. and Thurnau, G.: Adverse Perinatal Outcomes Are significantly Higher in Severe Gestational Hypertension than in Mild Preeclampsia. **AJOG**, 2002, 186 (1): P.P.66-71.