

Effect of Maternal Hypertension on Neonatal Outcome in Diyala Province, Iraq

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Abstract

Background: Maternal hypertension and preeclampsia are a multisystem, highly variable disorder unique to pregnancy and a leading cause of maternal and fetal/neonatal morbidity and mortality. Given the progressive nature of the disorder, delivery is often necessary to minimize maternal morbidity and mortality; obstetricians must balance the need for achieving in utero fetal maturation with the maternal and fetal risks of continuing pregnancy.

Objectives: To evaluate the maternal burden and neonatal outcomes of infants delivered to mothers with preeclampsia, to review the outcomes of late-preterm infants, and potential strategies to optimize fetal outcomes in pregnancies complicated by preeclampsia.

Materials and Methods: A cohort prospective study done in Al-Batool Teaching Hospital for maternity and children from October 2011 to April 2012 for 55 mothers coming for antenatal follow up how hypertension and preeclampsia had been followed till delivery with their delivered neonates looking for the maternal hypertension, medication, liver function, complete blood picture, complications of preeclampsia and neonatal condition at birth, weight, respiratory function, feeding, complete blood picture and liver function, small for gestational age (SGA), respiratory distress syndrome (RDS), and neonatal death (NND) .

Results: Infants of women with preeclampsia were more likely to be SGA 27(49%) and have RDS 6 (10.1%); Frequency of preterm delivery at <37 weeks' gestation rose greatly with increasing severity of maternal hypertension 16 (29%). Fetal distress was seen in 12 cases (21.8%) with meconium staining of liquor in 8 cases 14.5%, 33 neonates (60%) required admission for many reasons. Mothers with hypertension have high risk of ante partum hemorrhage 40(72%), 17 delivered normally (30%) while 38 delivered by caesarean section (70%).

Conclusion: Compared with neonates delivered prematurely because of other etiologies, neonates born to preeclamptic mothers were more likely to be SGA and have less RDS, but had a decrease in mortality. This may be a reflection of the differences in the underlying pathophysiology behind indicated preterm birth due to preeclampsia.

Key Words: Maternal hypertension, Neonatal outcome, Diyala province, Iraq.

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Introduction

Maternal hypertension and preeclampsia are a multisystem, highly variable disorder unique to pregnancy and a leading cause of maternal and fetal/neonatal morbidity and mortality [1–7]. While preeclampsia complicates 6%–10% of all pregnancies in the United States, the incidence is believed to be even higher in underdeveloped countries [8, 9]. Recent evidence suggests that preeclampsia accounts for approximately 15.9% of all maternal deaths in the United States and is a major cause of perinatal morbidity and death [10, 11]. Therefore, physicians must carefully weigh the risks to both mother and fetus in management decisions. To that end, optimal treatment strategies have not been fully defined, leaving physicians with incomplete data to guide their patient care practices [8, 12, 13]. The increased incidence of perinatal morbidity and mortality seen in pregnancies complicated by preeclampsia, although complex and multifactorial, is primarily due to the need for premature delivery and uteroplacental insufficiency resulting in a compromise of blood flow to the fetus [14, 15].

Ante partum diagnosis of mild, moderate, and severe preeclampsia are based on series of defined criteria occurring after 20 weeks of gestation [16]. Severe PE is defined as a blood pressure greater than 160 mm Hg (systolic) or 110 mm Hg (diastolic) associated with proteinuria greater than or equal to 5 grams per day. In contrast, mild PE is characterized by an elevated blood pressure less than 160 mm Hg (systolic) or 120 mm Hg (diastolic) with proteinuria greater than 300 mg, but less than 5 g, per day [9].

The only definitive cure for preeclampsia is delivery of the fetus and placenta [18]. Given the progressive nature of the disorder, delivery is often necessary to minimize

maternal morbidity and mortality. On the other hand, one of the primary goals of obstetricians is to deliver infants who are functionally mature and capable of adapting to the extrauterine environment without the need for intensive care [19]. Therefore, in pregnancies complicated by preeclampsia, obstetricians must balance the need for achieving in utero fetal maturation with the maternal and fetal risks of continuing pregnancy, including progression to eclampsia, abruptio placentae, and HELLP syndrome, as well as fetal growth restriction and demise [17, 20–22]. At the present time, delivery is typically recommended for women who develop preeclampsia, regardless of disease severity, at 37 gestational weeks [23]. In addition, delivery is recommended for all women with severe preeclampsia not after than 34 weeks gestation [9, 24].

In pregnancies complicated by preeclampsia, thrombocytopenia is generally identified at birth or within the first 2–3 days following delivery, with resolution by 10 days of life in most cases [38].

Materials and Methods

A cohort prospective study done in Al-Betool Teaching Hospital for Maternity and Children from October 2011 to April 2012 for 55 mothers coming for antenatal follow up how had preeclampsia had been followed till delivery with their delivered neonates looking for the maternal hypertension, medication, liver function, complete blood picture, complications of preeclampsia and neonatal condition at birth, weight, respiratory condition after birth, feeding, complete blood picture and liver function .

Results

Infants of women with preeclampsia were more likely to be SGA 27 (49%) and have RDS 6 (10.1%); Frequency of preterm delivery at <37 weeks' gestation rose greatly

with increasing severity of maternal hypertension 16 (29%). Fetal distress was seen in 12 cases (21.8%) with meconium staining of liquor in 8 cases 14.5%, 33 neonates (60%) required admission for many

reasons. Mothers with hypertension have high risk of ante partum hemorrhage 40(72%), 17 delivered normally (30%) while 38 delivered by caesarean section (70%).

Table (1): Ante partum Maternal Demographic data of the study.

Criteria	Preeclampsia (Total 55cases) No. of cases	% from total
Thrombocytopenia	3	5.4
High liver enzymes	3	1.8
Protienuria	2	3.6
Antenatal H.	40	72
Still Birth	1	1.8
Abortion	0	0
Normal delivery	17	30
Caesarian delivery	38	70

Table (2): Neonatal Demographic data of the study.

Criteria	(Total 55 cases) No. of cases	% from total
RDS	6	10.1
Sepsis	0	0
Meconium stained liquor	8	14.5
Fetal distress	12	21.8
NICU admission	33	60
Death	0	0
Resuscitation	50	90
Thrombocytopenia	0	0
Low Birth weight	27	49
High liver enzymes	0	0

Discussion

Accumulating evidence suggests that preterm infants are physiologically immature compared with infants born at term and are at significant risk for a broad range of complications [25, 29]. Neonatal and infant mortality rates are consistently higher in late-preterm infants than in term infants [30, 32].

Evidence suggests that late-preterm infants have nine times greater incidence of respiratory distress syndrome than term infants (28.9% versus 4.2%) [33,34], while in this study 10.1% cases developed respiratory distress and required neonatal intensive care admission (Table 2). Importantly, evidence suggests a significant reduction in neonatal respiratory morbidity



when gestation is extended beyond 34 weeks, a benefit seen for each week increase in gestational age up to term [33, 34]. In a population-based study of neonatal morbidity in the United States, the incidence of RDS was 7.4% at 34 weeks, 4.5% at 35 weeks, 2.3% at 36 weeks, and 1.2% at 37 weeks [33].

Stillbirth represents an important cause of fetal loss in the preterm infant [34]. Although greater than 90% of fetal deaths occur in the first 20 weeks of gestation, the rate of stillbirth is approximately 3 per 1000 live births beyond 28 weeks gestation in our study % of cases have fetal deaths (table 2) Interestingly, evidence suggests that beginning at approximately 36 weeks, the risk of intrauterine fetal demise increases substantially [35]. Severe preeclampsia represents significant risk factor for intrauterine fetal demise, with estimated stillbirth rate of 21 per 1000 [36]. Maternal preeclampsia can result in neonatal thrombocytopenia, typically defined as a platelet count less than 150,000/uL [37].

Conclusion

Historically, there has been a relative lack of consideration to the complications of premature delivery at greater than 34 weeks gestation, with the belief that 34 weeks is a surrogate marker for fetal maturity. Recent evidence suggests that infants born between 34 and 36 weeks gestation are, in fact, physiologically immature compared to term infants. Because of the high variability of each case, a general recommendation for the optimal timing of delivery is not possible. However, based on the review of data, we believe that a multidisciplinary, collaborative approach between the fields of maternal-fetal medicine and neonatology is necessary to weigh the maternal and fetal risks of prolonging the pregnancy versus the potential benefits of further fetal maturation across most gestational ages.

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