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Perinatal Outcome According to Gestational Age- A study of 50 Cases

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Abstract

Background: Gestational age supports predicting a potential due date, informing obstetrical care and testing, and assessing the baby's health at birth. It is vital to obtain a gestational age in all pregnancies to offer regular care and medical management for both mother and fetus. The ultimate suitable techniques for calculating gestational age are ultrasonography. The study aims to investigate the perinatal outcome according to gestational age. **Material & Methods:** A Prospective cross-sectional study was carried out in the Department of Obstetrics & Gynecology, Bangabandhu Sheikh Mujib Medical University, Hospital, from January 2008 to June 2008. A total of 50 patients were enrolled in this study following the inclusive criteria. Data were collected using the predesigned semi-structured questionnaire. Verbal consent was taken before recruiting the study population. Completed data forms were reviewed, edited, and processed for computer data entry. **Results:** Among the study population (N=50), one-fifth of the mothers' (10,20.0%) age was under twenty. The majority of mothers were (34,68.0%) between 20-30 years old with a mean age of 25.4 ± 4.32 years. Twenty-three patients (23,46.0%) came at 40+ weeks of pregnancy, eighteen patients came at (18,36,0%) on 41 weeks of pregnancy and nine patients (9,18.0%) came at41+ weeks of pregnancy. There was no perineal tear and two patients (2,4.0%) had cervical tears which were repaired. In two patients (2,4.0%) there was postpartum haemorrhage, among them two patients (2,4.0%) needed a blood transfusion. Among the healthy babies, the majority of the babies (20,40.0%) were born at 40 completed weeks of gestation, eighteen babies (18,36.0%) at 41 completed weeks and two babies (2,4.0%) were born at 42 completed weeks of gestation. **Conclusion:** Many childhood and adult diseases are linked with size at birth and are mostly inclined by early postnatal growth is widely accepted. The evolving fetus formulates itself for post-partum life by reporting to metabolic signals in its uterine environment.

Keywords:- Gestational Age, Neonatal Outcome, Ultrasonography, etc.

INTRODUCTION

Gestation is the phase between conception and birth and is the common tenure used during pregnancy to define how far along the pregnancy is. Through this time the baby matures and develops inside the mother's womb. It is measured in weeks, from the first day of the woman's last menstrual cycle to the present date.[1] Gestational age helps to guess a

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potential due date, notify obstetrical care and testing, and evaluate the baby's health at birth. It is essential to obtain a gestational age in all pregnancies to offer regular care and medical management for both mother and fetus. A combination of patients' history, physical test, initial sonography in the first trimester, and prenatal valuations are all important to calculate more accurate gestational age.[2,3] Gestational age based on menstrual dating is, however unsound in four features, such as; normal length may fluctuate between women, women with uneven menstruation & as a result irregular bleeding pattern may often cause impulsive, unrecognized blunders, bleeding early in pregnancy may sometimes be erroneous for a late menstrual period and faults in the woman's recall of her date of last menstrual cycle.[4,5] Many clinicians suggest routine ultrasound screening at the time of pregnancy to identify multiple-gestation pregnancies, fetal growth disturbance, congenital anomalies, and placental abnormalities. But it is known if the identification of certain conditions through screening leads to interventions that benefit perinatal outcomes.[6] The prime possible complications that upset the mother during the 3rd trimester are pregnancy-induced preeclampsia, eclampsia, gestational diabetes, anaemia, premature rupture of membrane, preterm labour, placenta praevia, etc.[7] Neonates born in the initial term (37-38 weeks gestation) experience slower neurodevelopment & this could be due to maximum perinatal morbidity, gestational age at birth may also affect the brain.[8] The utmost suitable techniques for calculating gestational age are ultrasonography.[9] Permitted a neonate to be found as small gestational age (SGA), ultrasonography records must be added by exact measurement of birth length. The accuracy of ultrasonography directories, like crown-rump length and biparietal, diameter, in estimating the gestational age is reliant on correct estimations being made during gestation.[10] The study intends to determine perinatal outcomes according to gestational age.

Objectives

- To assess the perinatal outcome according to gestational age

MATERIAL AND METHODS

A hospital-based cross-sectional study was carried out in the Department of Obstetrics & Gynecology, Bangabandhu Sheikh Mujib Medical University, Hospital, from January 2008 to June 2008. A total of 50 patients (N=50) were enrolled in this study following the inclusive criteria. Data were collected using the predesigned semi-structured questionnaire. Purposive sampling technique was used. Ethical clearance was taken from the hospital. The information was kept confidential only to be used for the study purpose.

Inclusion Criteria

Patient having uncomplicated singleton pregnancy
Patient having pregnancy at or around 41 weeks
Patient having cephalic presentation

Exclusion Criteria

Patients with eclampsia/ pre-eclampsia, Cardiac disease and any other medical disease, CPD, Multiple pregnancy, APH

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Patients with pre-existing fetal distress
Patients with previous history of caesarean section

Data analysis

The study coordinators performed random checks to verify data collection processes. Completed data forms were reviewed, edited, and processed for computer data entry. Frequencies, percentages, cross-tabulations were used for descriptive analysis. Simple statistical method was applied.

RESULTS

Among the study population (N=50), one-fifth of the mothers' (10,20.0%) age was under twenty. The majority of mothers age were (34,68.0%) between 20-30 years old with a mean age of 25.4 ± 4.32 years. Most of the patients (25,50.0%) had secondary education, nine patients (9,18.0%) were illiterate and sixteen patients (16,32.0%) had up to the primary level of education. Many of the patients (24,48.0%) came from middle-socio-economic condition, one-third of the patients (15,30.0%) came from upper class, thirty patients (30,60.0%) were primigravida and twenty patients (20 ,40.0%) were multigravida [Table 1]. Twenty-three patients (23,46.0%) came at 40+ weeks of pregnancy, eighteen patients came at (18,36,0%) on 41 weeks of pregnancy and nine patients (9,18.0%) came at41+ weeks of pregnancy [Table 2]. E.D.D were diagnosed by LMP with clinical assessment only in thirteen cases (13,26.0%) and by LMP with the clinical assessment with was confirmed by investigation (USG) in thirty-seven cases (37,74.0%) [Table 3]. Around three-fifths of the mothers (30,60.0%) underwent normal vaginal delivery and two-fifth of the mothers (20,40.0%) underwent caesarian section [Table 4]. There was no perineal tear and two patients (2,4.0%) had cervical tears which were repaired. In two patients (2,4.0%) there was postpartum haemorrhage, among them two patients (2,4.0%) needed a blood transfusion. There was no intrapartum or post-partum pyrexia [Table 5].

Table 1: Distribution of the study population based on Characteristics (N=50).

Characteristics	**(N,%)**
Age in years	
<20	10, 20.0%
20-30	34,68.0%
>30	6,12.0%
Mean ±SD	25.4 ± 4.32
Education	
Illiterate	9,18.0%
Upto primary	16,32.0%
Secondary	25,50.0%
Socioeconomic condition	
Lower class	11,22.0%
Middle class	24,48.0%
Upper class	15,30.0%

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Gravidity	
Primigravida	30,60.0%
Multigravida	20,40.0%

Table 2: Distribution of the study population based on the Duration of Pregnancy (N=50)

Duration of pregnancy	**(N,%)**
40+ wk	23,46.0%
41 wk	18,36.0%
41 + wk	9,18.0%

Table 3: Distribution of the study population based on the Procedure of Diagnosis (N=50)

Procedure of diagnosis	**Number**
By LMP with clinical assessments and confirmed by investigation (USG)	37, 74.0%
By LMP with clinical assessments only	13,26.0%

Table 4: Distribution of the study population based on Mode of Delivery (N=50)

Mode of Delivery	**(N,%)**
Vaginal delivery	30,60.0%
Caesarian section	20,40.0%

Table 5: Distribution of the study population based on Maternal Complications (N=50)

Maternal complication	**(N,%)**
Abnormal uterine action	8,16.0%
Cervical tear	2,4.0%
Postpartum haemorrhage	2,4.0%
Manual removal of placenta	0,0.0%
Blood transfusion needed	2,4.0%
No complication	36,72.0%

Table 6: Distribution of the study population based on Neonatal condition at birth (N=50)

Neonatal Condition	**(N,%)**
Fetal outcome	
Healthy baby	40,80.0%
Asphyxiated baby	8,16.0%
Still birth	0,0.0%
Other complications	2,4.0%
APGAR score at 1 minutes	
<5	2,4.0%
5-6	6,12.0%
7-10	42,84.0%

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APGAR score at 5 minutes	
<5	0,0.0%
5-6	4,8.0%
7-10	46,92.0%
Birth weight	
<2.5 Kg	6,12.0%
2.5-4 Kg	42,84.0%
>4 Kg	2,4.0%

Table 7: Distribution of the study population based on Neonatal Complications (N=50)

Complications	**(N,%)**
Intrapartum fetal distress	
Fetal heart rate abnormality	4, 8.0%
Variable fetal heart rate meconium staining	8,16.0%
Resuscitations	
Resuscitations not needed	40,80.0%
Resuscitations needed	10,20.0%
Referral to neonatal care	
Asphyxia and low APGAR score	4,8.0%
LBW	2,4.0%
Birth trauma	1,2.0%
Post maturity syndrome	1,2.0%
Rh incapability	1,2.0%
Admission to neonatal care unit	
LBW	1,2.0%
Birth Asphyxia	1,2.0%

Table 8: Distribution of the study population based on Neonatal Outcome

Fetal outcome	**Completed 40 weeks**	**Completed 41weeks**	**Completed 42 weeks**	**Total**
	(N,%)	**(N,%)**	**(N,%)**	**(N,%)**
Healthy baby	20,40.0%	18,36.0%	2,4.0%	40,80.0%
Asphyxiated baby	2,4.0%	0,0.0%	6,12.0%	8,16.0%
Other complications	1,2.0%	0,0.0%	1,2.0%	2,4.0%
Total	23,46.0%	18,36.0%	9,18.0%	50,100.0%

Forty babies (40,80.0%) were healthy, and eight babies (8,16.0%) were asphyxiated and were resuscitated properly. The majority of the babies (42,84.0%) had birth weights within the normal range of 2.5-4 kg. The 5 minutes APGAR score was in the range of 7-10 in the majority of cases (46,92.0%) [Table 6]. Intrapartum fetal distress occurred in total twelve babies (12,24.0%), ten babies (10,20%) needed resuscitation and forty babies (40,80.0%) needed

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no resuscitation. In terms of referral to the neonatal care unit, it was found that a total of nine babies (9,18%) were referred to the neonatal care unit due to different complications [Table 7]. Among the healthy babies, the majority of the babies (20,40.0%) were born at 40 completed weeks of gestation, eighteen babies (18,36.0%) at 41 completed weeks and two babies (2,4.0%) were born at 42 completed weeks of gestation. Among the asphyxiated baby six babies (6,12.0%) were born at 42 completed weeks of gestation, and two asphyxiated babies (2,4.0%) were born at 40 completed weeks of gestation. All two babies (2,4.0%) with other complications [Table 8]

DISCUSSION

A cross-sectional study was carried out to evaluate the perinatal outcome according to gestational age. The perinatal period is the time instantly before and after birth. Disabilities originating from this period are mainly biomedical ones and may result from prematurity, injury, oxygen deprivation, or infections acquired during the trip through the birth canal.[11] Risk factors in the perinatal period include pregnancy-related complications, prematurity and low birth weight, and infection exposure during pregnancy or at the time of birth.[12]

In this current study, most of the mothers were 20 to30 years of age with a mean age of 25.4 years. In Australia, scientists showed that 45% of women aged between 20 to 34 years.[13] A study conducted in Ethiopia found that majority of the patients were between 18 to 30 years old.[14] A retrospective cohort study found that most of the mothers were 26 to 28 years old.[15] Another study showed that the ages of the patients ranged from 18-43 years, with a mean age of 29.3 years.[16] The current study depicted that, the majority of the mothers (25,50.0%) completed a secondary level of education. A related result was found in another analysis, conducted in Nigeria.[14] Another analysis found that the majority of mothers completed a four-year college program.[15] Another analysis depicted that, one-fourth (25.8%) of the mothers were incompetent to read and write.[17]

In the recent study, around three-fifths of the patients (30,60.0%) were primigravida and twenty patients (20,40.0%) were multigravida. A study conducted in Dublin, Ireland showed that half (50.4%) were primigravidas and 49.6% were multigravidas.[18] Another study accompanied in India revealed that a total of 4981 deliveries, 2179 were primigravida and 2802 were multigravida.[19]

This recent study found that twenty-three patients (23,46.0%) came at 40+ weeks of pregnancy. Based on the outcome and gestational age, those whose gestational ages were alike to greater than 41 weeks and 3 days constituted the maximum number who had induction of labour, however, the vaginal delivery rate was lowest in them.[16] A related study found that half of the patients were multiparous and about 70% of the patients were undertaken induction labour at the gestational age of 37-41 completed weeks.[14] Another investigation found that almost 1 in 4 mothers (24%) experienced induction labour before 39 weeks.[20] A similar analysis described that most of the women underwent induction labour earlier 290 days.[21] In this contemporary analysis, E.D.D were diagnosed by LMP with clinical assessment only in thirteen cases

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(13,26.0%) and by LMP with a clinical assessment with was confirmed by investigation (USG) in thirty-seven cases (37,74.0%). A study carried out in Bangladesh found that USG is a better option compared to LMP to estimate EDD.[22] Another article depicted that, E.D.D was adjusted in 13 (5.7%) women in the scan group and 2 (0.9%) in the no-scan group.[23]

In this study, around three-fifths of the mothers (30,60%) underwent vaginal delivery. Another study depicted that, a significantly higher fraction of women delivering by cesarean delivery stated some, moderate, severe, or life-threatening pain or discomfort at 12 months postpartum than women undergoing spontaneous vaginal delivery.[24]

In this current analysis, the most common maternal complication was abnormal uterine action in 16% and other less commonly observed complications were cervical tear, postpartum haemorrhage and blood transfusion requirement.

Another study depicted that, the risks of perinatal mortality outcomes were considerably increased with placental abruption, ruptured uterus, systemic infections, preeclampsia, and severe anaemia.[25]

Another study suggested that extreme blood loss and difficulty in delivery the neonates were significantly more frequent in multiple caesarian deliveries. Placenta accrete and hysterectomy were more common and major complications were higher in the multiple caesarean sections.[26]

The most frequent neonatal complications were intrapartum fetal distress, only two (2,4.0%) required admission to NICU. However, nine (9,18.0%) neonates were referred to neonatal intensive care in this current analysis. Another study found that neonatal complications included a higher incidence of hyperbilirubinemia due to the increased threat of neonatal complications, especially if a caesarean section must be performed due to inefficient induction.[27] One efficient review found that a policy of labour induction of mothers with post-dated pregnancy in contrast with expectant management was associated with lesser perinatal deaths and fewer caesarean sections.[28]

In this recent analysis, among the healthy babies, the majority of the babies (20,40.0%) were born at 40 completed weeks of gestation, eighteen babies (18,36.0%) at 41 completed weeks and two babies (2,4.0%) were born at 42 completed weeks of gestation. Among the asphyxiated baby six babies (6,12.0%) were born at 42 completed weeks of gestation, and two asphyxiated babies (2,4.0%) were born at 40 completed weeks of gestation. Another study conducted at Parkland Hospital, Dallas found that the birth weight of the neonates increased significantly from 40 to 42 weeks. Five-minute Apgar scores less than 4 and the NICU admission rate increased slightly from 40 to 42 weeks.[29] A related study depicted that, neonates of women in the induction group were less likely to have respiratory morbidity, meconium aspiration syndrome and neonatal intensive care admission.[30] A related article found that neonatal intensive care unit admissions and sepsis improved with each week of gestational age until 39 weeks.[31]

A growing body of evidence believes improved or not worsened birth outcomes with non-

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medically indicated induction of labour at 39 weeks gestation in contrast with expectant management.[32]

CONCLUSIONS

Few fetal outcomes progress until 39 weeks and may vary by labour onset type. The occurrence of SGA births is relatively common at almost 10% of all live births. Numerous childhood and adult diseases are associated with size at birth and are mainly inclined by early postnatal growth is widely accepted. The emerging fetus formulates itself for post-partum life by reporting to metabolic signals in its uterine environment.

Recommendation

Further research with a larger sample from distinct centres and a similar group of expected delivery should need to validate the current study results. To get robust data, multicenter studies are in great need of policymakers to interpret the demonstrable scenario and to take necessary steps toward mitigating this problem.

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