PERINATAL OUTCOME IN TERMS OF APGAR SCORE AT 5 MINUTES AFTER INDUCTION OF TERM AND POST-DATE PREGNANCIES

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ABSTRACT

Objective: To determine perinatal outcome in terms of Apgar score at 5 minutes after delivery and admission in neonatal intensive care unit (NICU) in induction of term and post-dates pregnancies.

Study Design: Descriptive case series.

Place and Duration: Gynaecology/Obstetrics Department, Military Hospital, Rawalpindi from 16-02-2009 to 15-08-2009.

Subjects and Methods: One hundred and sixty three patients were included in this study. Patients were closely monitored during labour. Perinatal outcome was noted by assessing Apgar score at 5 minutes after delivery and by number of babies admitted to NICU within 1st 24 hours after delivery.

Results: Apgar score at 5 minutes was more than > 7 in 67 (94.4%) of term pregnancy and in 85 (92.4%) in post date pregnancy and this difference was insignificant (p=0.618). Only one baby (1.4%) among term group required admission in NICU within first 24 hours of delivery while 3 babies (3.3%) in post date pregnancy had admission in NICU with insignificant difference (p=0.448).

Conclusion: Post-term pregnancy, in most cases, probably represents a variant of normal and is associated with good outcome, regardless of form of care givers. In minority of cases there is an increased risk of perinatal death and early neonatal convulsions.

Keywords: Apgar score, Induction of labour, Post-date pregnancies.

INTRODUCTION

Timely onset of labour and delivery is an important determinant of perinatal outcome. Post-term (prolonged) pregnancy refers to any pregnancy that continues beyond 42 weeks (294 days) of gestation. It complicates 10% of all deliveries and is associated with increased perinatal and neonatal morbidity and mortality, including stillbirth, birth injury, meconium aspiration syndrome, neonatal encephalopathy and infant mortality. Post-term pregnancy also poses significant risk to the mother, including an increased risk of caesarean delivery, severe perineal injury and postpartum hemorrhage. Fortunately post-term pregnancy can be avoided by earlier induction of labour[1].

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Received: 19 Nov 2012: Accepted: 18 Feb 2013

Reported frequency of post-date pregnancy is approximately 3-12%. Most frequent cause of post-term pregnancy is inaccurate dating criteria. Additional risk factors include primiparity, prior post-term pregnancy, male gender of fetus, and genetic factors[2].

A calculated gestational age by composite biometry from a sonogram must be considered an estimate and must take into account the range of possibilities[3].

Importance of determining by what method a pregnancy is dated cannot be overemphasized because this may have significant consequences if the physician delivers a so-called term pregnancy that is not or observes a so-called term pregnancy that is post-term. Similarly, amniotic fluid index (AFI) by ultrasonography is reliable fetal surveillance test. It may allow conservative approach till 42 weeks to reduce caesarean section rate due to failed induction of labour as well as perinatal morbidity and mortality"[4].

There is an increased lower segment caesarean section (LSCS) rate in intervention group (induction). However in non-intervention group (expectant) perinatal mortality was about twice more as compared to the intervention group[5].

The study will help to conclude whether delaying the induction till 41^{+4} weeks can be done without any harmful effects on perinatal outcome in our population and thus avoid complications associated with inductions specially unnecessary caesarean sections.

MATERIAL AND METHODS

It was a cross-sectional comparative study carried out Gynaecology/Obstetrics Department, Military Hospital, Rawalpindi, over period of six months from 16-02-2009 to 15-08-2009 after approval of ethic committee. Total of 163 singleton pregnant women between ages of 18-35 years (as risk of chromosomal abnormalities in higher after 35 years of age) from 39-41^{+4} weeks of pregnancy were included after written informed consent from couple and divided into two groups i.e term pregnancy group (39-40^{+3}) and post date pregnancy group (40^{+4} - 41^{+4}). However, patients with pregnancy induced hypertension, grand multipara (4 or > 4 children), pre-eclampsia and pregnancy with cardiac disease were excluded.

Demographic data was collected regarding age, race and socio-economic status. Detailed history was taken and thorough physical examination was carried out to remove confounding variables. Fetal well being was assessed at arrival by Cardiotocography (CTG) which is graphical representation of fetal cardiac status and biophysical profile which includes: amount of liquor , fetal heart rate, fetal breathing movements, fetal tone with ultrasonography was done giving 2 score for each dilatation, consistency of cervix, length of cervix, position of the cervix and station of the head. The range of score for each parameter was from 0-3. Total bishop score was 13. Time of induction was decided by consultant according to bishop score.

Patients were closely monitored during labour. Perinatal outcome was noted in patients by assessing Apgar score at 5 minutes after delivery and by number of babies admitted to NICU within 1st 24 hours after delivery.

The data were entered into SPSS version 10.0. Descriptive statistics i.e mean ±SD of age was calculated, while frequency/percentages were calculated for mode of delivery, gestational age, birth weight, gender of baby and admission to NICU. Chi-Square test was applied for comparison of outcome variable i.e. admission in NICU and Apgar score in term and post-date pregnancies. $p < 0.05$ was considered significant.

RESULTS

There were total 163 patients included in current study, out of which 71 patients (43.5%) were at 39 - 40^{+3} weeks gestational age and 92 patients (56.5%) were between 40^{+4} - 41^{+4} weeks. Mean age of patients was 26.9 ± 5.1 while average gestatinal age in both the groups was 40^{+4} weeks.

Regarding distribution of mode of delivery in both the groups majority were delivered through spontaneous vaginal delivery (SVD). While studying weight of the baby, majority (95.7%) of the babies had normal (3-4.5 kg) birth weight in both the groups. Among 163 babies, 97 (59.5%) were male while 66 (40.5%) were female babies (Table-1).

Apgar score at 5 minutes was more than >7 in 67 (94.3%) of term pregnancy and in 85 (92.4%) in post date pregnancy (p= 0.618) (Table-2).

Only one baby (1.4%) among term group required admission in NICU within first 24 hours of delivery while 3 babies (3.3%) in post date pregnancy had admission in NICU (p=0.448) (Table-2).

DISCUSSION

Post date pregnancy is a subject of interest because of its presumed association with increased fetal and maternal mortality and morbidity. Purpose of this study was that in our setup induction of labour can be delayed upto 41^{+4} weeks safely without increasing rate of lower

segment caesarean section and any adverse fetal outcome[6].

In present study rate of spontaneous vaginal delivery was 87.1%, forceps delivery was 1.8%, vacuum delivery was 1.2. Our results are supported by a comparative study of post-term and term pregnancy in Nepal Medical College Teaching Hospital (NMCTH) which showed rate of normal delivery to be 88%, instrumental delivery 2.4% and caesarean delivery 9.6%[7]. Our findings are also supported by a study conducted at Saudi Arabia which showed rate of normal delivery 89.5%, instrumental delivery 2.4% and caesarean section 8.1%[6].

A Chochrane review of 19 RCTs found that routine labour induction at 41 weeks gestation resulted in lower perinatal mortality rates[10].

In this study 95.7% of babies were born with normal birth weight (3-4.5 kg), 1.8% with low birth weight (< 2.5 kg) and 2.4% with very low birth weight (< 1.5 kg). These results are very much comparable with the study carried out at Nepal Medical College Teaching Hospital which showed good Apgar score 96.5% of term pregnancies and 86.1% of post date pregnancy and bad Apgar score in 3.5 % of term and 13.9% of post date pregnancy[7]. These results are also supported by a study conducted in Saudi Arabia[6].

Table-1: Comparison of cases by mode of delivery, weight and gender of baby between the groups.

Variables		Term pregnancy (n=71)	Post date pregnancy (n=92)	*p*-value
Mode of Delivery	Spontaneous vaginal delivery (SVD)	59 (83.09%)	83 (90.21%)	0.190
	Forceps	2 (2.82%)	1 (1.09%)	
	Vaccum	0 (0%)	2 (2.17%)	
	Lower segment caesarean section (LSCS)	10 (14.08%)	6 (6.52%)	
Weight (Kgs)	Normal x(2.5–4.5 Kg)	70 (98.59%)	86 (93.47%)	0.646
	Low birth weight (LBW) (1.5–2.5 Kg)	1 (1.40%)	2 (2.17%)	
	Very (LBW) < 1.5 Kg	0 (0%)	4 (4.35%)	
Gender	Male	38 (53.52%)	59 (64.13%)	0.171
	Female	33 (46.48%)	33(35.87%)	

LBW= Low birth weight, LSCS= Lower segment caesarean section SVD= Spontaneous vaginal delivery

Table-2: Comparison of Apgar score at 5 minute after delivery and comparison of admission of baby in neonatal intensive care unit (NICU).

Variables		Term pregnancy (n=71)	Post date pregnancy (n=92)	*p*-value
Apgar Score	Good (>7)	67 (94.4%)	85 (92.4%)	0.618
	Bad (<7)	04 (05.6%)	07(07.6%)	
Admission to NICU	Yes	01(01.4%)	03(3.3%)	0.448
	No	70(98.6%)	89(96.8%)	

In our study good Apgar score (> 7) was observed in 94.4% of babies in term pregnancy and 92.4% in post-date pregnancy and bad Apgar score (< 7) was seen in 5.6% of term pregnancy group and 7.6% in post-date pregnancy.

In study of Sobande and Albar, Apgar score < 7 at 5 minutes was observed in 2% of babies whose mothers were induced at 41 and 42 weeks of gestation. This may be due to small number of women included in their study conducted at Saudi Arabia[6].

Marahatta et al showed Apgar score at 5 minutes > 7 in 96.5% of term group and 86.1% of post-term group and bad Apgar score < 7 was seen in 3.5% of term pregnancy group and 13.9% in post-term pregnancy group. Therefore, our results are close to above mentioned study[7].

In a local study conducted at Hyderabad Sindh reported neonatal admission rate to be 5% in induction of pregnancy. These results also favour my study findings[8].

Neonatal intensive care unit (NICU) admission rate in study of Sobande and Albar showed 3.4%in post date pregnancy, which is similar to our study[6].

In meta-analysis of 16 RCTs comparing induction at 41 weeks versus expectant management no significant difference was found in neonatal intensive care unit admission, meconium aspiration or low Apgar scores[9].

Outcome of post-term pregnancy. A matched-pair case-control study conducted at Liverpool Women's Hospital, Liverpool, UK included 124 patients who delivered after 42 weeks of pregnancy showed statistically no significant difference in incidence of perinatal and early neonatal death, nor for admissions to NICU after delivery[11].

In a local study conducted by Iqbal at Karachi showed neonatal depression at birth was more in expectant group and at 5 minutes almost same between two groups (4% expected versus 2% induced)[5].

A recent Cochrane review concluded that a policy of labour induction at 41 weeks or beyond was associated with fewer perinatal deaths (relative risk 0.30). There was no evidence of statistically significant difference in risk of caesarean section for women induced at 41 and 42 completed weeks of gestation. Women between 37 and 40 weeks of gestation were more likely to have caesarean section with expectant management than those in labour induction group[12].

All these studies showed that induction of labour at 41 weeks is associated with no increase rate of perinatal morbidity or mortality.

CONCLUSION

In this study perinatal outcome in both the groups was good without significant difference so we can safely delay induction of labor till 41 weeks.

Postdate pregnancy, in most cases, probably represents a variant of normal and is associated with good outcome, regardless of the management. In a minority of cases there is an increased risk of perinatal death and early neonatal convulsions.

Induction of labour should be performed when necessary at term. With accurate dating of gestation, delivery by 41 weeks of gestation is a reasonable aim. Women can be assured that induction of labour at this gestation does not increase risk of adverse perinatal outcome.

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