Lamont and Chen[2] reported that spontaneous preterm birth accounts for 60-75% of preterm deliveries with variation in frequency depending on socio-economic status and other factors. Sixty four percent (49/77) of this study population were in spontaneous preterm labour (group A). The various associations seen with spontaneous preterm delivery were PPROM (27/49), twins (3/49), breech presentation (5/49), and anomalies (2/49). No cause was attributed in 12 women.

Jorge[3] reported that deliberate intervention accounts for 20-30% of preterm deliveries . In our study 36% of preterm deliveries were due to deliberate intervention (group B) either for fetal or maternal indications like severe PIH (13/28), severe IUGR (11/28), APH (4/28).

Grant et al[4] reviewed optimum mode of delivery for preterm babies and reported that data is not sufficient to justify a policy of cesarean delivery for a small baby. The orthodox view is that preterm vertex presentations may be allowed vaginal delivery in the absence of any contraindication; but the preterm breech will benefit from cesarean section.

Classification into group A and B has demonstrated that if patients are in spontaneous labour they have a higher chance of vaginal delivery in comparison to a cesarean section i.e. 61% v/s 39%.

Crowley[5] reviewed 15 trials including 3560 cases of preterm labour, which demonstrated that the use of antenatal steroids significantly reduces the incidence of RDS and neonatal death. Crowley also reported that the available evidence supports that one course of steroid has a definite role.

Out of 75 women who received antenatal steroids 4 had fresh stillborn babies and 71 had live born babies. Forty-seven out of this 71 had received the standard dose of steroids whereas 24 had received the nonstandard dose. The beneficial effect of antenatal steroid against RDS was evident in this study. In the standard dose group only 7/47 (15%) developed RDS while in nonstandard group 14/24 (58%) developed RDS.

Chard et al[6] reported that the risk of RDS and neonatal death does not appear to be related to the birth weight of preterm neonates but is, of course, related to gestational age. In our study 79% of the perinatal deaths were in 28-32 weeks of gestation (Table III). A large number of babies (57%) from both the groups weighted between 1500-2000 gms (LBW). There were 14 perinatal deaths, which included 6 FSB and 8 NND and all were in ELBW or VLBW group (Table IV). Severe IUGR with VLBW mainly accounted for fresh stillbirths. Respiratory distress syndrome accounted for large number of neonatal deaths 7/8 (88%) (Table – II).

Fetal outcome was good, 63 out of 77 survived and were discharged in a good condition. Probable reasons for this good outcome include –

a) in utero transfer of preterm babies
b) antenatal steroids
c) timely obstetric intervention
d) tertiary obstetric and neonatal services

Among the 63 surviving babies 5 are lost to follow up; the remaining 58 are doing well. The long-term complications can be known only with a serial follow up of these children.

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Retrospective Analysis of Spontaneous v/s Induced Preterm Deliveries and Neonatal Outcome

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Objective - To evaluate the factors that influence the neonatal morbidity and mortality in preterm babies. **Methods** A retrospective analysis of 77 preterm births was done from August 1998 to September 1999. Forty nine were inspontaneous preterm labour (group A) while 28 were electively induced (group B) for obstetric indications. Antenatal steroids were given to 75 women (51 received standard dose and 24 received the nonstandard dose). Intravenous tocolysis was used to inhibit labour in group-A, to achieve the benefit of steroids. **Results -** Overall fetal survival rate was 82%. Perinatal mortality was confined to the babies a) weighing less than 1.5 kgs b) of gestational age 28-32 weeks and c) with fetal anomalies. Neonatal morbidity mainly included hyperbilirubinemia. **Conclusions -** The incidence of respiratory distress syndrome was less (15% v/s 58%) in those who received the standard dose of steroids. Perinatal outcome was directly proportional to the birth weight and gestational age.

Key words : preterm birth, neonatal morbidity, perinatal mortality

Introduction

In spite of great advances in obstetric management, preterm delivery still poses a great challenge. Preterm delivery with its associated morbidity and mortality represents one of the major unsolved problems in obstetrics. Conservative management of these patients until at least 34 weeks when the estimated fetal weight is around 2 kgs will reduce neonatal morbidity and mortality and the cost of neonatal care. The role of antenatal steroids has been proved beyond doubt while the roles of tocolytics and antibiotics are still controversial. The aim of this study is to determine the effect of antenatal steroids, birth weight and gestational age on neonatal morbidity and mortality in preterm babies.

Materials and Methods

A retrospective study was done during the period of one year from August -1998 to September – 1999, wherein all the preterm deliveries were analyzed. Women who delivered between 28-37 weeks of gestation were included in the study. On admission, detailed history and examination findings were documented. Gestational age was determined from last menstrual period and clinical examination and further supported by ultrasonogram.For the purpose of analysis we classified our patients into two distinct groups.

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Group A - were in spontaneous preterm labour, in whom uterine contractions were associated with cervical changes.

Group B - were electively induced for obstetric complications like - severe PIH, IUGR, and APH.

All the patients in group A had the following investigations done : complete blood count, urine microscopy, endocervical swab for aerobes and anaerobes and Chlamydia antigen. An ultrasound scan was done for estimated fetal weight, liquor volume and anomalies.

In group B, apart from clinical findings, NST ultrasound and dopplers were the main diagnostic tools used to time the delivery. Initial management consisted of the following -

Group A	Group B
1. Complete bed rest,	1. Treatment of obstetric complication
2. Steroids	2. Steroids
3. IV Tocolytics	
4. Antibiotics for those with PROM	

Patients who received antenatal steroids were categorized into two groups. Standard dose recipients and nonstandard dose recipients. The standard dose was defined as two doses of 12mg of betamethasone given at an interval of 12 hours, delivery taking place after 24 hours and within 7 days of the second dose of steroid. When these criteria were not satisfied it was considered as non-standard dose. Isoxuprine hydrochloride was used for tocolysis (60 mgs-6 amps/- in 500 ml of Ringer's lactate at 60 mgs/min upto 300 mgs/min). Maternal and fetal monitoring were done at regular intervals.

Observations and Results

There were 77 preterm births out of the total 440 deliveries (17.5%). Sixty four percent (64%) of the study population were referred, while 36% were booked. Two thirds of women (64% i.e. 53/77) were in spontaneous labour at the time of admission (group A) while one third (36%-24/77) were electively induced for obstetric complications viz. PIH, IUGR, APH (group B).

All women received antenatal steroids except for two in group A who had lethal fetal anomalies. Of the 75 who received steroids 51 (67%) received the standard dose, whereas 24 (33%) received a nonstandard dose.

In group A, 24 out of 47 progressed to deliver within 24 hours of steroids while 23 out of 47 delivered after 24 hours of steroids. In group B, all the patients delivered after 24 hours of steroids as they were induced electively.

Mode of delivery

In group A, vaginal delivery was common (30/49 (61%) compared to cesarean section 19/49 (39%).

In group B cesarean section was common (18/28 (64%) compared to vaginal delivery 10/28 (36%). The indications for cesarean section are shown in Table I.

Table I : Cesarean Delivery - Indications

Indication	Group A (19/49)	Group B (18/28)
Fetal Distress	4	9
Failure to progress	7	5
Breech Presentation	5	0
Twins (nonvertex first twin)	3	0
Severe PIH	0	2
Placenta Previa	0	2

There were 14 perinatal deaths amongst the 77 (18%) of which 6 were fresh still births (FSB) and 8 were neonatal deaths (NND). The causes for the perinatal mortality are given in Table II.

Table II : Perinatal Mortality - Causes

Causes	Group A (6/49)	Group B (8/28)
Fresh Still Births	2	4
* IUGR	0	4
* Anomaly	2	0
Neonatal Deaths	4	4
* RDS	3	4
* Inborn Error of Metabolism	1	0

Table III gives mortality distribution according to the gestational age.

Table III : Perinatal Mortality v/s Gestational Age

Gestation Age	Perinatal Deaths (n=14)
28-30 wks	7 (50%)
30-32 wks	4 (29%)
32-34 wks	1 (7%)
34-36 wks	2 (14%)

Table IV give mortality distribution according to the birth weight.

Table IV : Perinatal Mortality v/s Birthweight

Birth weight	Perinatal Deaths (n=14)
Extremely low birth weight ELBW (≤+1000 gms)	7 (50%)
Very low birth weight VLBW (1001-1500 gms)	7 (50%)
Low birth weight LBW (1501-2000 gms)	Nil

Table V describes the various causes of neonatal morbidity in the two groups. Hyperbilirubinemia and respiratory distress syndrome (RDS) accounted for the greatest morbidity.

Table V : Neonatal Morbidity – Causes

Causes	Group A (n=43)	Group B (n=20)	Total (n=63)
Hyperbilirubinemia	29	15	44 (69%)
Respiratory distress syndrome	14	7	21 (33%)
Necrotizing enterocolitis	7	3	10 (16%)
Sepsis	5	3	8 (13%)
Intraventricular hemorrhage	3	1	4 (6%)
Retinopathy of prematurity	3	0	3 (5%)

Discussion

Preterm delivery complicates 7-12% of all pregnancies. In our study the incidence of preterm delivery was 17.5% which is high and this is most likely due to referral pattern to a tertiary care center. In the institutions serving as referral centers, the rate is often higher. In South Australia the Adelaide Women's and Children's Hospital, a major tertiary center, had a 15.5% incidence of preterm delivery in 1996[1].