Maternal and neonatal outcome of high order gestation

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Objective: To study maternal and neonatal outcome of triplets, quadruplets and quintuplets gestations. Method: This retrospective review of 21 triplets, 3 quadruplets and 3 quintuplet's delivered between 1st January 1990 and 31st of August 2001. Results: Preterm labour was the most common maternal complication (96.3%). The 27 high order gestations resulted in 88 live births and two stillbirths. The early neonatal mortality rate for the entire group was 91, 45 late neonatal deaths and 57 infant deaths. 71 (80.7%) of the 88 live born infants survived to discharge. The incidence of respiratory distress syndrome was 69.3% and mechanical ventilation had also been necessary in 69.3% of newborns, patent ductus arteriosis was diagnosed in 7.9% of cases. Intraventricular hemorrhage had been diagnosed in 13.6% of cases. Nercotizing enterocolitis occurred in 8 cases. Neonatal sepsis was diagnosed in 24 cases (27.3%). Conclusion: Early diagnosis, meticulous antenatal care, early hospitalization, frequent evaluation of fetal well being, delivery by cesarean section and on site availability of trained neonatologists and a highly functional intensive care unit are essential for better outcome.

The incidences of high order gestation (more than two fetuses) have increased significantly since the introduction of ovulation-induction therapy and in vitro fertilization and embryo transfer technique (1-5). An increase in the number of fetuses is associated with an increase in the frequency of maternal complications and high perinatal mortality as well as morbidity (6-9). The natural incidence of high order gestation varies from 1 in 7921 to 1 in 9,829, and with the advent of ovulation induction and in vitro fertilization, the incidence is increased to 1 in 8,506 (6). The ultimate outcome of high order gestation relates partially to the number of fetuses and the quality of obstetric and neonatal care. Availability of ultrasonography has become greater in the last decade which allows early diagnosis of high order gestation, along with improved obstetric and neonatal care which are expected to influence the outcome of theses pregnancies, mainly by reducing perinatal morbidity and mortality in high order gestation.

Selective reduction of the number of fetuses in high order gestation (9,10) has recently been introduced to improve morbidity and mortality. When selective termination is considered, aside from its

ethical and legal implications, hard facts with regard to the possible maternal and fetal risk from the procedure versus the outcome of high order gestation managed at tertiary center are necessary.

The purpose of this study is to retrospectively review the experience of high order pregnancies at the King Fahd Hospital University between January 1990 and August 2001 to determine the frequency of both maternal and neonatal complications.

Materials and methods

This is a retrospective study of all maternal and neonatal charts of high order gestation delivered at the King Fahd Hospital University, after 24 weeks gestation between January 1st 1990 to August 31st 2001 reviewed by myself.

King Fahd Hospital University is a tertiary care obstetric and perinatal referral center serving the eastern province of Saudi Arabia.

Maternal records have been reviewed for parity, gestational age and ovulation induction. Maternal complications and neonatal records were reviewed for the presence of congenital malformations and neonatal complications such as respiratory distress syndrome, hyperbilrubinemia, intraventricular hemorrhage, pulmonary hemorrhage, sepsis and nercotizing enterocolitis.

High order gestation is defined as a pregnancy with three or more fetuses after 24 weeks. Early neonatal mortality is defined as the number of deaths per 1000 of live born infants weighing 500 GM or less during the 1st week of life.

Late neonatal mortality is defined as the number of deaths per 1000 of live born infants weighing 500 GM or less after 7 days and before 28 days of life.

Perinatal mortality rate is defined as the sum of fetal deaths and first week neonatal deaths per 1000 total births, both weighing 500 GM or less.

Results

During Eleven and half years of the study, twenty-one triplets, three quadruplets and three quintuplets have been delivered at the hospital. Ovulation induction and assisted conception techniques, such as in-vitro fertilization, were responsible for nearly 90% of all cases.

Table 1 shows that preterm labour was the most common maternal complication (96.3%), 60% of which occurring before 32 weeks gestation, followed by post partum hemorrhage (25.9%), diabetes and pre-clampsia (11.1%) and placental abruption (7.4%). Cervical cerclage was inserted in 14.8% of the cases.

All cases, except one, were diagnosed correctly by ultrasonography. One case had been diagnosed as triplet gestation and was found to have quadruplet at the time of cesarean section. All cases were delivered by cesarean section, except one case of triplets at 24 weeks delivered vaginally, and in all cases low transverse incision has been used. So the interval between actual births was less than one minute in all women who had been abdominally delivered. In the case of the woman whom had delivered vaginally at 24 weeks gestation, the interval between the first and the second was 5 minutes, and 7 minutes between the second and the third.

All women had been admitted selec-

Complications	no	%
Preterm labour	26	96
Premature rupture of membrane	9	33
Post partum hemorrhage	7	2
Endometritis	1	4
Diabetes mellitus	3	11
Placental abruption	2	7
Pre-clampsia	3	11
Chorioamnitis	1	4
Deep vein thrombosis	1	4

Table 1 - *Incidence of maternal complications (n=27)*

	Triplets N=61	Quadruplets N=12	Quintuplets N=15	All N=88
Birth weight	1401 + 502*	1552 + 350	1387 + 460	1474+432
Congenital anomalies N(%)	5(8)	0	0	5(6)
Respiratory distress syndrome N(%)	45(7)	8(67)	8(53)	61(69.3)
Mechanical ventilation N(%)	44(72)	8(67)	9(10)	61(70)
Hyperbilrubinemia N(%)	28(46)	6(50)	11(12)	45(51)
5 Minutes Apgar score <7 N(%)	13(21)	1(8.)	7(47)	21(24)
Narcotizing enterocolitis N(%)	3(5)	1(8.)	4(27)	8(9)
Patent ductus arteriosus N(%)	4(7)	0	3(20)	7(8)
Patent foramen ovale N(%)	1(2)	0	0	1(1)
Intraventricular hemorrhage N(%)	8(13)	3(25)	1(7)	12(14)
Sepsis N(%)	18(30)	0	6(40)	24(27)
Stillbirths N(%)	2(3)	0	0	2(2)
Early neonatal deaths <8 days N(%)	8(13)	0	0	8(9)
Late neonatal deaths 8-28 days N(%)	2(3)	0	2	4(5)
Infant deaths				
29 days-1 year N(%)	5(8)	0	0	5(6)
Survival to discharge N(%)	46(75.4)	12(100)	13(86.7)	71(80.7)
Perinatal mortality per 1000 births	158.7	0	0	111

* Value are mean + standard deviation

Table 2 - *Neonatal outcome and complications (n=88)*

tively to hospital for bed rest. A total of 77.8% of mothers carrying triplets, intravenous tocolytic agents were administered in 85.6% of cases, usually the treatment was initiated when there had been contractions shown by the cardiotocogram. The gestation at birth for triplet was 30.6 + 4.9 weeks (range, 24-37 weeks), for quadruplets 30.3+0.8 weeks (range, 30-32 weeks) and for quintuplets 30.03+1.69 weeks (range, 28-32 weeks).

Table 2. The 27 high order gestations have resulted in 88 live births and two stillbirths. Two triplet gestations, each of which included a stillborn fetus and in one of those triplets there was a conjoint twin, one baby was alive and died within the first day of having been delivered and the other was stillborn. The male to female ratio was 1.1. The mean birth weigh for live born triplets was 1,401+502 GM (range, 570-2,200 GM), for quadruplets 1,552+350 GM (range, 1,100-2150 GM) and for the quintuplets 1,387+460 GM (range, 850-1600 GM). Congenital anomalies occurred in 5 live born infants (5.7%).

The early neonatal mortality rate for the entire group was 91, late neonatal deaths 45 and infant deaths 57. Of the 88 live born infants, 71(80.7%) survived to discharge. Details of neonatal and infant deaths are shown in table 3.

We believe that our data is of particular importance when it comes to deciding about the delivery of high order gestation

Table 2 also shows neonatal complications. The incidence of respiratory distress syndrome was 69.3%, and mechanical ventilation was also necessary in 69.3% of newborns. Patent ductus arteriosus has been diagnosed in 7.9% of cases. Intraventricular hemorrhage has been diagnosed in 13.6% of cases. Narcotizing enterocolitis occurred in 8 cases. . Neonatal sepsis was diagnosed in 24 cases (27.3%).

Case no.	Type of gestation	Gestation at birth (weeks)	Weight (grams)	Age at death (days)	Neonatal complications
1	Triplet	37	2200	25	Respiratory distress syndrome
2	Triplet	29	1270	7	Hyperbilrubinemia, Respiratory distress syndrome, Intraventricular hemorrhage, pulmonary hemorrhage
3	Triplet	29	1060	15	Hyperbilrubinemia, pulmonary hemorrhage, sepsis, Narcotizing enterocolitis, Respiratory distress syndrome
4	Triplet	29	890	40	Hyperbilrubinemia, Respiratory distress syndrome, pulmonary hemorrhage, Sepsis
5	Triplet	27	1020	34	Respiratory distress syndrome, Intraventricular hemorrhage, pulmonary hemorrhage, sepsis
6	Triplet	27	890	1	Hyperbilrubinemia, Respiratory distress syndrome , Intraventricular hemorrhage, sepsis, Disseminated intravascular coagulopathy
7	Triplet	27	1000	80	Hyperbilrubinemia , Respiratory distress syndrome, Intraventricular hemorrhage, sepsis
8	Triplet	29	580	3	Hyperbilrubinemia
9	Triplet	30	580	66	Hyperbilrubinemia, Respiratory distress syndrome, sepsis, Narcotizing enterocolitis
10	Triplet	30	610	42	Hyperbilrubinemia, Respiratory distress syndrome, sepsis
11	Triplet	30	570	3	Respiratory distress syndrome, sepsis
12	Triplet	28	2500	1	Conjoint twin, one is stillbirth
13	Triplet	28	960	1	Respiratory distress syndrome, Intraventricular hemorrhage, pulmonary hemorrhage, sepsis
14	Triplet	24	570	2	Respiratory distress syndrome, Intraventricular hemorrhage
15	Triplet	30	1050	1	Respiratory distress syndrome, sepsis
16	Quintuplet	30	970	17	Hyperbilrubinemia, Respiratory distress syndrome, sepsis, Narcotizing enterocolitis
17	Quintuplet	30	850	16	Hyperbilrubinemia, Respiratory distress syndrome, sepsis, Narcotizing enterocolitis

Table 3 - Details of neonatal and infant deaths

Case report

A 23-year-old woman, para 3, with a known quintuplet pregnancy was admitted at 30 weeks gestation because of regular uterine contractions. The current pregnancy was gotten by in-vireo fertilization. All 5 fetuses were alive. She had had cervical cerclage inserted at 16 weeks gestation. After admission she had premature rupture of the membrane. The cervix was 3 cm dilated with regular uterine contractions. Lower segment cesarean section had been performed. She gave birth to 5 live babies all of which were males, birth-weights were, 1170, 970, 850, 1420, and 1400 GM. The two babies who weighed less than 1000 GM died on day 16 and day 17 because of sepsis and necrotizing enterocolitis. The other 3 babies were discharged home and during the follow up they were doing well.

Discussion

This study has been undertaken in order to find out the outcome of high order gestation managed in a tertiary hospital in the Eastern Province of Saudi Arabia. In agreement with other studies the most common complication observed was preterm labour (96.3%) (6,10). This rate was higher than reported in most previous studies and is likely to

reflect a more aggressive attitude in the diagnosis and treatment of preterm labour (11).

Perinatal mortality in triplet gestations was 158.7 per 1000 births; this may partially attribute to a high proportion of very premature infants delivered in this group. Four out of twenty-one women (19%) were delivered at 28 weeks or less and six of those babies died before being discharged from the hospital. At the same time there were no perinatal deaths among quadruplets and quintuplets born at the same hospital, this may be due to the availability of surfactant therapy and other neonatal improvements (2,6,10).

The data from our study showed that early neonatal mortality rate was 91 per 1000 live births and that the late neonatal mortality was 45 per 1000 live births and overall perinatal mortality rate was 111 per 1000 births. Those figures from a center in a developing country can be favourably compared with results reported from developed countries (10,11).

Obviously, it is impossible to attempt to attribute the more favourable outcome in the present study, especially amongst quadruplets, quintuplets and triplets of gestational age of more than 28 weeks, to a single variable because it is certain that multiple factors in the management of these pregnancies are responsible for this perinatal outcome. It seems that the major factors responsible for the improved outcome include early diagnosis, meticulous antenatal care, early hospitalization, and frequent evaluations of fetal well being, delivery by cesarean section and on site availability of trained neonatologists as well as a highly functional intensive care unit.

We believe that our data is of particular importance when it comes to deciding about the delivery of high order gestation.

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