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Original Research Article

Incidence and Outcome of Neonates of Multi-Fetal Gestations Admitted To a Tertiary Hospital in North Western Nigeria

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ABSTRACT

BACKGROUND: There is a significant variation in the incidence and outcome of multi-fetal pregnancies worldwide. Fetal outcome depends on quality antenatal care/intrapartum management.
OBJECTIVE: To determine the current pattern and evaluate the outcome of multi-fetal gestations in Sokoto, North Western Nigeria.
METHODS: This was a prospective study of products of multiple gestations admitted to Special Care Baby Unit (SCBU) of the Usmanu Danfodiyo University Teaching Hospital (UDUTH), Sokoto, from 1st June, 2012 to 31st May 2013. The information obtained was used to determine the incidence of multiple gestations and their outcome.
RESULTS: Total deliveries for the period was 2,116, admission to the SCBU was 446(22.0%). Nineteen mothers that had multiple gestations delivered in our hospital while, 8 delivered outside the facility. Twenty seven (12.8 per 1000 births) mothers had multiple gestations (65 babies); 18 (8.5 per 1000 births) mothers had twins, 7(3.3 per 1000 births) mothers had triplets and 2 mothers had quadruplets (1.0 per 1000 births). Males were 34 (52.3%) and females were 31(47.7%), with male to female ratio of 1.1:1. Prematurity/low birth weight was the commonest cause of admission to the SCBU. Total deaths were 18(27.7%); 4(22.2%) of the twins (one of a set was stillbirth), 9(50.0%) of the triplets (4 were stillbirths) and 5(27.8%) of the Quadruplets.
CONCLUSION: The incidence of multi-fetal gestations at our centre is relatively high. Majority of the parturient are of high parity, preterm delivery is the most common obstetric complication. Improved antenatal care services and good intrapartum management will help increase survival rates of products of multiple gestations.

Key words: Incidence, outcome, multi-fetal gestations, tertiary hospital

INTRODUCTION

Compared to singletons, aggregates of evidence have shown that twins and other higher multiple births (multi-fetal births) are associated with a higher risk of maternal and perinatal mortality and morbidity worldwide. [1-3] This higher risk has contributed to unacceptable high levels of infant and child mortality in many developing countries despite the significant improvements in child survival in recent decades. [2,4] Globally, the highest burden of

multiple births has been found in sub-Saharan Africa, with an average twining rate of 20 per 1,000 deliveries compared to 10 per 1,000 deliveries in Europe or around 5-6 per 1,000 deliveries in Asia. [5] Nigeria has the highest prevalence of multiple-fetal births worldwide. [6] Multiple births are relatively rare events, but contribute substantially to mortality in both neonatal and post-neonatal periods. [7] Yoruba of western Nigeria is considered "land of twins". Almost 5 percent of all Yoruba births produce twin, compared with just around 1.2 percent for Western Europe and 0.8 percent for Japan. [3,8,9]

Twining is a multifactorial phenomenon principally attributable to genetic and environmental factors, such as advanced maternal age and increased parity. [3,8] Previous studies have associated high infant mortality with multiple births in both developing and developed countries. [10-12] Multiple births are often disproportionately represented among preterm, low birthweight or intrauterine growth-restricted infants. [6,8] Maternal and infant morbidities following multiple pregnancies, unlike perinatal mortality rates, have not been thoroughly described in developing countries. [6,8,12] There is a significant variation in the incidence and outcome of multi-fetal pregnancies worldwide. It was the realization of this variation that it became imperative to carry out this prospective study as a way of improving the care for products of multiple gestations in the study area.

MATERIALS AND METHODS

The Special Care Baby Unit (SCBU) of Usmanu Danfodiyo University Teaching Hospital, Sokoto; the capital of Sokoto State, Nigeria serves as the referral centre to its three neighboring States and Niger Republic. The study period was for 1year; consecutive birth data/maternal profile of multiple gestations at the labor room of the teaching hospital were recruited. Other relevant information obtained included, the maternal age, maternal weight, sex, ethnicity, birth order, family history of multiple birth, socio-economic status and birth weight of the baby. Discharged babies were followed up at our neonatal clinic for the first 28 days of life.

Each multiple birth child was analyzed as an individual child, and the clustering effect of each group of multiple births was included in the analyses. All statistical analyses were computed using the SPSS software (version 20.0) (SPSS Inc., Chicago, IL, USA). Univariate associations between multiple gestations and perinatal outcomes were explored with Pearson's χ^2 or Fisher's exact tests and, with Student's *t*-test. The level of statistical significance was set at $p< 0.05$.

RESULTS

There were a total of 2,116 deliveries during the study period. Admission to the SCBU was 466(22.0%). Twenty seven (i.e. 12.8 per 1000 births) mothers had multiple gestations (65 babies); 19 mothers delivered in our hospital while, 8 delivered outside our facility. Of the products of multiple gestations admitted to the SCBU; twins were 18 (8.5 per 1000 deliveries), triplets were 7 (3.3 per 1000 deliveries) and quadruplets were 2 (1.0 per 1000 deliveries). Males were 34 (52.3%) and females were 31(47.7%) with male to female ratio of 1.1:1. One of two mothers that had quadruplet delivery had an earlier treatment for primary infertility and, eventually had invitro fertilization (IVF), all the other mothers with higher-order multiple births in this study conceived naturally. The observed maternal characteristics included; mean maternal age of 29.7(years) ± 7.8 with minimum of 17 years and maximum of 41 years ($p = 0.0001$, $X^2 = 62.6$) mean maternal height of 1.6(meters) ± 0.6 and mean maternal weight

of 81.2(Kg) ± 8.1 SD. Majority of mothers (64.6%) were of high parity(X = 17.01, p = 0.0001) and 51(78.5%) attended ante natal clinic. (Table I).

Table I: Characteristics of mothers with multiple gestations.

	Twins	Triplets	Quadruplets	Total
Age (years)				
< 20	14	0	0	14
21-25	4	0	0	4
26-30	8	3	4	15
31-35	4	12	0	16
36-40	6	6	0	12
>40	0	0	4	4
Total	36	21	8	65
$X^2 = 62.6$ p = 0.0001				
Socio-economic status				
High	10	3	4	12
Middle	20	12	4	36
Low	6	6	0	12
Total	36	21	8	65
$X^2 = 5.7$ p = 0.23				
Parity				
< 4	19	0	4	23
>4	17	21	4	42
Total	36	21	8	65
$X^2 = 17.01$ p = 0.0001				
ANC				
Yes	24	19	8	51
No	12	2	0	14
Total	36	21	8	65
X = 6.95 p = 0.0003				
Place of delivery				
UDUTH (Hospital)	24	19	8	51
Home	12	2	0	14
Total	36	21	8	65
$X^2 = 6.95$ p = 0.0003				

All the studied neonates had prematurity/low birth weight, 56 (86%) of them had respiratory distress syndrome and 32 (49%) were treated for perinatal asphyxia. Table II showed the birth characteristics and outcome amongst neonates of multiple gestations. The mean birth weight (kg) was 1.94 ± 0.52 SD with minimum of 0.90kg and maximum of 2.90kg (X = 18.03, p = 0.0001) and the mean gestational age was 32.35(weeks) ± 0.48 SD. Forty five (69.2%) studied neonates were discharged home and 2 babies (a set of twins) were discharged against medical advice. Total number of deaths were 18(27.7%); 4(22.2%) from twin gestation (one of a set was stillbirth), 9(50.0%) from triplets (4 were stillbirths) and 5(27.8%) of the Quadruplets.

DISCUSSION

The overall incidence of multiple gestations of 12.8 per 1,000 deliveries in this study is relatively lower than previous reports from other parts of Nigeria; 40.2% in South-West Nigeria, [13] 28 in Jos North-Central area, [14] 27.6 reported in Nnewi in the South-East, [15] 26 per 1,000 deliveries in Uyo, South-South Nigeria [16] and 14.4 in Maiduguri, North-East region, [17] These findings suggest that the rate of twining in Sokoto, North Western Nigeria is lower than that seen in other regions of the country. However, all the apparently healthy products of multi-fetal pregnancies delivered in our

labor room that their mothers had no medical problems were discharged home. They were not included in this study, this may account for the low incidence in the study area. Previous studies have shown the Yorubas in Nigeria to have the highest twinning rate worldwide. [18] Considering higher-order multiple births (births higher than twin gestation), the incidence in this study is similar to that earlier reported among the Hausas of Northern Nigeria [19] but, lower compared to South-West Nigeria [13] and amongst Caucasians. [20] The current rise in higher- birth order in developed countries being attributed to hi-tech infertility management (in vitro fertilization, IVF) was not applicable in our study population as all the pregnancies except one (a set of quadruplets) were conceived naturally.

Table II: Birth characteristics and neonatal outcome associated with multiple gestations, N = 65

	Twins	Triplets	Quadruplets	Total
Gender				
Male	19	8	6	31
Female	17	13	2	34
Total	36	21	8	65
$X^2 = 3.17$; p = 0.21				
Birth weight (grams)				
<1000	1	1	0	2
1000-1499	3	8	2	13
1500-2499	16	11	6	33
>2500	16	1	0	17
Total	36	21	8	65
$X^2 = 18.03$; p = 0.0001				
Gestational age				
Preterm	16	18	8	42
Term	20	3	0	23
Total	36	21	8	65
$X^2 = 14.88$; P = 0.0001				
Outcome				
SAMA	0	0	2	2
Discharged	32	12	1	45
Died	4	9	5	18
Total	36	21	8	65
$X^2 = 29.24$; P = 0.0001				

Mothers in the age-group of 26-35 years, with mean age of 29.7±7.8years, were the majority which is similar to the findings of other studies. [14,15,21] Previous studies have suggested increased maternal age at conception to be a contributory factor to the observed high incidence in this age group. [14,22] Increased parity is associated with multiple gestations. [23] In this study, majority (65%) of the mothers are of high parity however, low mean parity has also been observed amongst mothers with multiple gestations. [21] Majority of the mothers in this study received antenatal care. Poor utilization of antenatal care is associated with poor fetal outcome in multi-fetal pregnacies. [12] Quality antenatal care provides for reduction/prevention of risks as well as planning for timed delivery. Preterm delivery was the commonest obstetric complication observed in the study as was the case in other studies carried out in Jos and Uyo. [16,21] It is the most important factor contributing to the increasing perinatal mortality and morbidity in multiple pregnancies. Multiple gestations increase the risk of preterm delivery and delivery of very low birth weight infants. [24] Preterm delivery, the commonest complication in this study compares with a worldwide reported incidence of preterm delivery in multiple pregnancies i.e. there was a 4- fold

and 8- fold increased risk for birth at < 29 weeks in triplet and quadruplet compared to twin births. [25] Another work done in the USA also revealed that the mean gestational age at birth was 35.8 weeks in twins and 32.5 weeks in triplets. [26]

There is similarity between this study and others for maternal age and parity; [26,27] we found that maternal age was higher in triplets and high-order gestations. There was an inverse relationship between number of fetuses and gestational age and birth weight in this study; this was similar to the findings of Shinwell. [28] In their study singletons were more often small for gestational age but the rate of growth restriction was similar in twins and triplets. This may be due to the fact that triplets are born early primarily because of preterm labor and relatively small uterine space, while singletons more often suffer from problems affecting intrauterine growth. [28.29] However, in other recent studies there was no difference when gestational age was corrected for mortality between premature singletons, twins and high multiple-order births. [30,31] The mean birth weight in this study of 1.94 ± 0.52 SD is lower compared to a study in South-West Nigeria [32] but, is similar to the low mean birth weight found in another study. [33] Majority (74%) of babies weighed less than 2.5 kg in this study which is comparable to earlier reports. [34,35] We therefore, suggest that increase improvement at preventing preterm deliveries and low birth weight are crucial to improving the fetal outcome of multiple gestations especially in developing countries. The mean gestational age at delivery of 32.35(weeks) ± 0.48 SD in this study is similar to that of studies conducted amongst American Caucasians. [36] The optimal gestational age at birth is reported to be 34–35 weeks. It has been documented that low birth weight are major factors responsible for the high perinatal morbidity and mortality amongst higher-birth order. [20]

CONCLUSION

The incidence of multiple gestations deliveries at our centre is relatively high. Majority of the parturient are of high parity, preterm delivery is the most common obstetric complication. Improved antenatal care services and good intrapartum management will help increase survival rates of products of multiple gestations.

Limitation of study: The apparently healthy products of multi-fetal pregnancies delivered in our labor room and, their mothers had no medical problems were discharged home. They were not included in this study.

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