

Twins in Jos Nigeria: a seven-year retrospective study

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SUMMARY

Introduction: A retrospective analysis of twin pregnancy was carried out between 1st January 1992 and 31st December 1998 to determine the incidence, epidemiological variables perinatal and maternal outcome of twin pregnancy in the institution.

Material and methods: The case notes of the 413 twin pregnancy, 6 triplets and 1 quadruplet delivered during the period, and the labour records of all the deliveries were analyzed. Statistical analysis was with chi-squared test. The level of significance was set at 5%.

Results: The incidence of twin pregnancy was 28/1000, triplet 0.4/1000 and quadruplet 0.07/1000. The age range of the twin mothers was 15–47 years with a mean of 28 ± 5.4 years. The parity range was 0–14 years with a mean of 3.3 ± 2.6 . Rising maternal age and parity were associated with twinning rate. The mean fetal weight was 2.21 ± 0.66 kg. There was no statistical significant difference in weight between the 1st and 2nd twins. Male babies however weighed heavier ($p < 0.02$) than the female infants. The incidence of low birth weight babies (< 2500 g) was 58.7% with a perinatal mortality rate of 278.4/1000. The perinatal outcome was worst for the very low birth weight babies (< 1500), 817.5/1000 8.5% of twin mothers had a retained 2nd twin. The perinatal outcome of the 27 unbooked mothers who delivered their 1st twin at home was (12) 44.4/1000, compared to the rate of 12.5/1000 (1) in 8 booked mothers, who delivered the 1st twin in the hospital. Among the 771 babies who were alive at the time of presentation in the labour ward, delivery by caesarean section had a better perinatal outcome (6.8%), compared to spontaneous vaginal delivery (13.1%) and assisted breech delivery (21.4%). The unbooked twin mothers had a perinatal mortality rate of 318.7/1000 compared to booked mothers 82.3/1000. The overall perinatal mortality rate was 186.4/1000. The clinical causes of death were prematurity 74.6%, retained 2nd twin 7.3%, antepartum haemorrhage 6.1%, severe pregnancy induced hypertension/eclampsia 3.0%, birth asphyxia 2.4%, congenital malformation 1.8%. The incidence of postpartum haemorrhage was 3% and there was no maternal mortality in the series. The institution will need to put in place adequate resuscitating facilities and manpower to manage the low birth weight infants so as to reduce the current high perinatal wastage.

INTRODUCTION

The incidence of multiple births varies with ethnic and geographical distribution. The highest rate occurs in Africa. The reports from Nigeria have shown that the twinning rates in the Western, Northern and Eastern parts of the country were about 53, 40 and 35/1000 deliveries respectively [1–3]. Comparatively the twinning rate in the far

Eastern countries is less than 5/1000 births and about 10–15/1000 among the Caucasians [4]. These variations in frequency are due mainly to the dizygotic twinning, which varies between 10 and 40, 7 and 11, 2 and 8 per maternities respectively in Africa, Europe and in the far East. The monozygotic rate in all these racial groups is however constant at about 3–7 per maternities [4]. As a determinant of twinning, the genotype of the mother is

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much more important than that of the father. Bulmer (1960) [5] reported that 1 out of 25 (4%) of twin mothers was a twin but only 1 out of 60 (1.7%) of their fathers was a twin. The positive effects of increasing maternal age and parity on the incidence of twinning, has been known for a long time. It is the variation in dizygotic twinning rate that was largely responsible for the variation in the twinning. The monozygotic rate varies only slightly with age [4].

Twin pregnancy represents a major risk factor in perinatal medicine. Studies [6,7] have shown that the primary neonatal problem with twin gestation is not that twins per se are more vulnerable to morbidity and mortality of prematurity but simply that frequent preterm babies are delivered compared to singleton birth. Restricted fetal growth is common in multiple pregnancies and is also an important aetiology in the increased incidence of low birth weight in multifetal gestations [8]. The larger the number of fetuses, the greater the degree of growth restriction, and this occurs most often when the placenta is monochorionic.

Perinatal mortality rates from Africa countries are high compared to the rates in the western world [9]. The reasons adduced for the unacceptability high perinatal mortality in developing African countries are the prevailing poor socio-economic condition, inadequate or non-existence of facilities to cope with low birth weight babies coupled with high twinning rates with its corresponding fetal loss [10].

Adverse maternal effect occurs also with multiple pregnancies. Hypertension, not only develop more often but also tend to develop earlier and tend to

be more severe. Coonrad et al (1995) [11] reported that twin pregnancy carries a four-fold increase risk of preeclampsia independent of race and parity and the risk in nulliparous is 14 times that of a singleton. Other authors [12] have documented similar findings.

The present study was carried out to determine the incidence, epidemiological variables, perinatal and maternal outcome of twin pregnancy in the institution.

MATERIAL AND METHODS

The records of all the 413 twin deliveries at Jos University Teaching Hospital between 1st January 1992 and 31st December 1998 were analyzed. The data collected were maternal age, parity, booking status, mode of delivery, sexes of babies, birth weights, complications of pregnancy, labour and puerperium. The booked mothers were those who registered for antenatal care in the hospital and also delivered in the institution. The unbooked mothers were those who did not receive antenatal care and presented as emergency cases in the hospital. The results obtained were subjected to statistical analysis using chi-squared test and the level of significance was set at 5%.

RESULTS

During the seven-year study period there were 14944 deliveries of which 413 were twins. The twinning rate was 28/1000 deliveries or 1 in 36 deliveries. 6 triplets and 1 quadruplet were also delivered during the same period giving incidences of 0.4/1000 and 0.07/1000 respectively. Figures 1

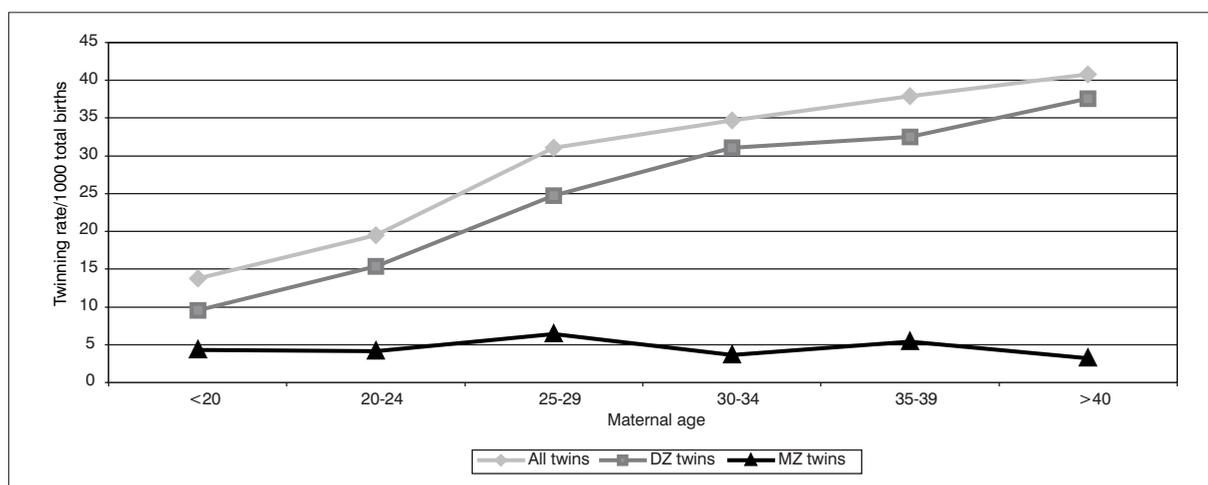


Figure 1. Influence of maternal age on twinning.

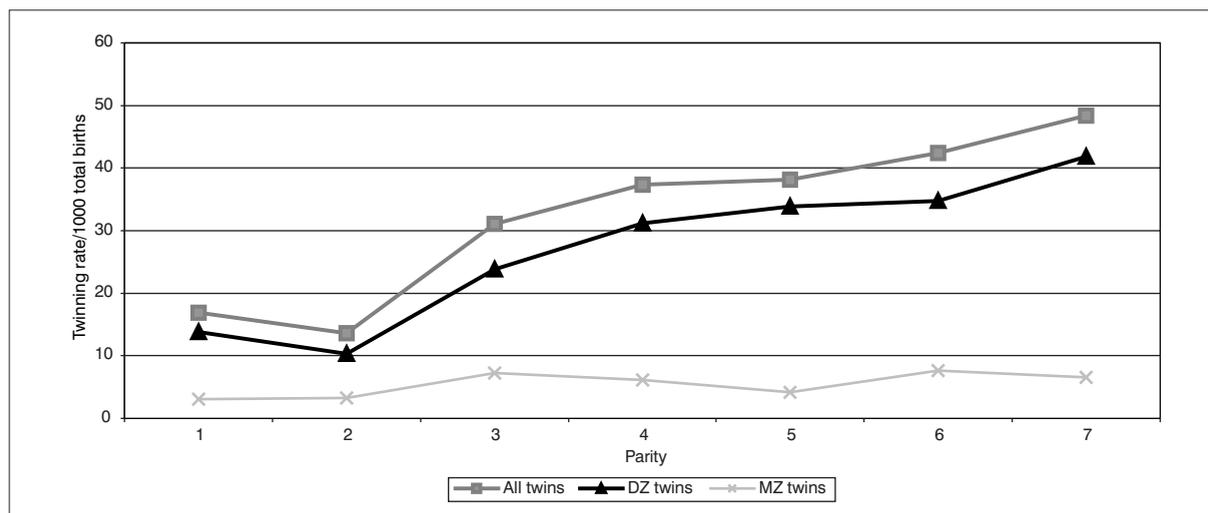


Figure 2. Influence of parity on twinning.

and 2 show the rate of twins based on maternal age and parity respectively. Twinning rate increased with maternal age as well as parity. The increases were, mainly in the dizygotic twins; the monozygotic twins were minimally affected. Because this study was retrospective, the details of the placenta, membranes and blood group were not available hence the determination of zygosity based on these parameters was not possible. The zygosity was indirectly determined using Weinberg's rule [4]. This calculation revealed twinning rate of 22.8/1000 for dizygotics and 4.9/1000 deliveries for monozygotics.

The commonest presentation of the twins during labour was vertex-vertex 65.1%, vertex-breech 14.5%, breech-vertex 11.5% and breech-breech 8.5%. Others were vertex-transverse 0.2% and breech-transverse 0.2%. With twins, all possible combinations of fetal positions may be encountered. The mean birth weight of the twins was 2.21 ± 0.66 kg. There was no statistical significant difference between the birth weight of the first twin (2.22 ± 0.67 kg) and that of the 2nd twin (2.20 ± 0.65). However the birth weight (2.29 ± 0.63 kg) of the male babies was significantly higher ($p < 0.02$) than the mean birth weight (2.16 ± 0.80) of the female babies. The male-female ratio was 1.1:1. Table 1 shows that the perinatal mortality rate for the twins was 186.4/1000. The low birth weight babies were 58.7% with a perinatal mortality rate of 278.4/1000 birth compared with babies weighing ≥ 2500 with a perinatal mortality rate of 55.7/1000. The influence of birth weight on perinatal mortality was statistically significant ($p < 0.001$).

Table 2 shows the mode of delivery and perinatal outcome of 771 twin babies who were alive at the time of presentation. The perinatal mortality was highest for the babies delivered by breech (21.4%) compared to spontaneous vertex delivery (13.1%) and caesarean section (6.8%). The mode of delivery had significant influence on the perinatal outcome ($p < 0.001$). There were 35 retained 2nd twins with an incidence of 8.5% and a perinatal mortality rate of 371/1000 (13). Among the mothers with retained

Table 1. Influence of birth weight on perinatal mortality.

Weight (grams)	Twins	Perinatal deaths	PNMR/1000
500-999	46	46	1000
1000-1499	91	66	758
1500-1999	107	15	178
2000-2499	241	8	4.6
2500-2999	263	15	6.1
3000-3499	68	4	5.9
3500-3999	10	-	-
Total	826	154	186.4

$$\chi^2 = 452.19, df 6, p < 0.001$$

Table 2. Influence of mode of delivery on perinatal outcome.

Mode of delivery	Babies	Perinatal deaths	Percentage
Spontaneous vaginal delivery	435	57	13.1
Assisted breech delivery	131	28	21.4
Caesarean section	205	14	6.8
Total	771	99	12.8

$$\chi^2 = 15.056, df = 2, p < 0.02$$

Table 3. Clinical causes of perinatal deaths in twin pregnancy.

Clinical causes of death	Number	Percentage
1. Prematurity	111	74.6
2. Retained 2nd twin	13	7.3
3. Antepartum haemorrhage	10	6.1
4. Mature cause unknown	7	4.2
5. Pregnancy induced hypertension/eclampsia	5	3.0
6. Birth asphyxia	4	2.4
7. Congenital malformation	3	1.8
8. Cord accident	1	0.6
Total	154	100

2nd twins, (27) 77.1% delivered the first twin at home while (8) 22.9% delivered the first twin in the institution. The perinatal mortality for the unbooked mothers was (12) 44.4% while it was (1) 12.5% for the booked patients. This shows the advantage of accessibility to medical care for those who delivered the first twins in the hospital.

26% (108) twin mothers had caesarean section. The indications were severe pregnancy induced hypertension/eclampsia 35.2%, footling breech 19.4%, retained 2nd twin 10.2%, previous caesarean section 9.3%, malposition 9.3%, fetal distress 5.6%, cord accident 4.6%, antepartum haemorrhage 4.6% and transverse lie 1.8%.

There were 55 (6.7%) stillbirths and 99 (12%) early neonatal deaths. The stillbirth rate among the 1st and 2nd twin were (15) 18/1000 and (40) 48/1000 birth respectively. The early neonatal death rates were (38) 56.5/1000 and (61) 90.8/1000 live births for the 1st and 2nd twin respectively. The perinatal mortality rate for the booked mothers was 82.3/1000 compared to 318.7/1000 for the unbooked mothers who were seen as emergency cases. The clinical causes of deaths were prematurity, retained 2nd twin, ante-partum haemorrhage, mature cause unknown, severe pregnancy induced hypertension/eclampsia, birth asphyxia, congenital malformation (mainly central nervous system abnormalities) and cord accident (Table 3).

The incidence of postpartum haemorrhage was (12) 3%. There was no maternal mortality among twin mothers.

DISCUSSION

The incidence of twin pregnancy in this study was 28/1000. This was made up of 23/1000

dizygotic and 5/1000 monozygotic twins. The incidence is within the normal range of 16–45/1000 quoted for Black Africans [4,5]. The rate is however less than the rates quoted for Western 53/1000, Northern 40/1000 and Eastern 35/1000 Nigeria [1–3]. The dizygotic rate of 23/1000 is similar to 10–40/1000 quoted for the black population and the monozygotic rate of 5/1000 falls within 3–6/1000 also quoted in black Africans [4]. The incidence of 28/1000 is however higher than 9–16/1000 for the Caucasians and 6–10/1000 for the Orientals [13]. In the Caucasian population there is a quoted ratio of 1 in 100, 1 in 10000, and 1 in 10⁶ for twins, triplets and quadruplets respectively. The corresponding values at Jos University Teaching Hospital were 1 in 36, 1 in 2491, and 1 in 14944. The differences are statistically significant suggesting that the triplets and quadruplets are relatively more common even than twins, in comparison with European populations.

The incidence of twin pregnancy in this study increased both with maternal age and parity. Studies [4] amongst Caucasian and in an African population similarly found the incidence of twinning to increase with maternal age, however, the increases were found to reach peak in the age group 35 to 39 years and 30 to 34 years respectively. Such peak was not seen in the present study. The variation in the twinning rate with maternal age and parity involved mainly the dizygotic twins. The monozygotic twinning rate is fairly stable throughout the world and it is minimally affected by age and parity [4,14]. The increased twinning rate with advancing maternal age and parity is thought to be due to increased ovarian activity under endogenous influence of stimulating hormone. This is corroborated by the fact that the first sign of reproductive aging that has been consistently observed is an isolated rise in serum follicle stimulating hormone [15]. The decrease rate noticed later in some of these studies may be due to exhaustion of Graafian follicle as menopause approaches.

The mean birth weight (2.21 ± 0.66 kg) of all the twins in this study is similar to 2.2 ± 0.5 kg and 2.28 kg quoted in the literature [2,14]. It is however slightly smaller than those quoted by other authors [16,17], 2.4 ± 0.69 kg and 2.38 ± 0.5 kg, respectively. Twin birth weights have a significant influence on the perinatal outcome. In this study the perinatal mortality increased with a decrease in birth weight, and worst for the very low birth

weight babies. The perinatal mortality of the 1st twin was better than that of the 2nd twin. This has been the experience of others [18,19]. The 2nd twin generally comes out worse than the first because of its rate of malpresentation and asphyxia associated with operative manipulation during delivery [18].

The mode of delivery has significant influence on the perinatal outcome. Caesarean section and normal vaginal delivery gave better perinatal outcome than breech delivery. The overall perinatal mortality in the series was 186.4/1000. It is two times higher than singleton perinatal mortality rate in the institution. This report is slightly less than the 4 to 11times incidence of perinatal mortality in twin births compared to singleton quoted in the literature [10,20]. The clinical causes of death were prematurity, retained 2nd twin, antepartum haemorrhage, severe pregnancy induced hypertension/eclampsia, birth asphyxia, congenital malformation and cord accident.

Several techniques have been applied in an attempt to prolong multifetal gestations such as bed rest, prophylactic administration of β -mimetics drugs and prophylactic cervical cerclage so as to reduce the preterm delivery. Most recent evidence suggests that routine hospitalization is not beneficial [21]. Most randomized trials of β -mimetics in twin pregnancies have also not shown significant reductions in preterm delivery rates [22]. Furthermore no significant reduction in preterm delivery or perinatal deaths has been demonstrated from prophylactic cervical cerclage [23]. Special prenatal clinic sessions, limited physical activity, early work leave and structured education on risks of preterm delivery have been advocated to be effective in reducing preterm births in women with twin pregnancies [24,25].

In conclusion the study has shown that twin pregnancy increased with maternal age and parity. Low birth weight babies contributed to the high incidence of the perinatal deaths. The institution of study would have to provide adequate resuscitating equipment and manpower in the special baby care unit to manage the low birth weight infants in order to reduce their perinatal mortality.

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