

Factors affecting the outcome in multiple gestations

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Abstract

Introduction: Twin births are the commonest form of multiple births. Twins have attracted considerable attention and excited curiosity from early times as a biological variety in the study of the human species. Twin pregnancy is considered as high risk pregnancy. There is poor neonatal outcome in terms of mortality and morbidity. **Materials and methods:** A retrospective study was conducted from Jan 2015 to Jan 2014 Mac Gann Government General hospital. During this period there were 2643 deliveries occurred out of which 48 twins and 8 were triplets. **Results:** In the present study, Incidence of twin pregnancy is 18/1000 live birth. Monozygotic twinning rate is 4.2/1000 live births, while dizygotic twinning rate is 14.2/1000 live births. Perinatal mortality in twins is 177/1000 births as compared to 74.3/1000 births in singleton pregnancy i.e., 2.38 times that of singleton pregnancy. In twin pregnancy Perinatal mortality rate in 1st twin is 62.5/1000 live births while in second twin it is 114.5/1000 births. Frequency of IUGR in twin pregnancy is 85.4%. Risk of preterm labour in twin pregnancy is 64.5%. IUGR babies are more in monochorionic than in dichorionic placenta. **Conclusion:** Perinatal mortality in twin is higher than in of singleton pregnancy. Risk of single fetal loss (antepartum deaths) in twin pregnancy is higher than risk of both fetal losses. Perinatal mortality rate in 2st twin is double compared to first twin. Perinatal mortality increases as the gestational age decreases. Frequency of IUGR in twin pregnancy is very high and more in monochorionic than in dichorionic placenta

Key words: Monochorionic, Dichorionic, Monozygotic, Dizygotic, Perinatal.

Introduction

Twin births are the commonest form of multiple births. Twins have attracted considerable attention and excited curiosity from early times as a biological variety in the study of the human species. The knowledge regarding the genetic and biological structure of twins is being used with great advantage in medical research, especially in modern surgery. In organ transplantation, which is becoming more and more successful day by day, the co-twin is the best possible donor. The monozygotic twin is a real boon for the surgeon working on kidney transplant [1]. Twins are more frequent after the second pregnancy and with advancing maternal age [2]. There is high rate of dizygous twinning has been described for women who has conceived within one month after stopping use of oral contraceptives[3]. Large numbers of births are encountered in lower socio-economic classes as compared to upper socio economic classes [4].

Twin pregnancy is considered as high risk pregnancy. There is poor neonatal outcome in terms of mortality and morbidity [5]. Factors influencing poor neonatal outcome includes maternal, fetal and placental factors. Anticipation of such factors can improve neonatal outcome in twin pregnancy. There are few studies on neonatal outcome in twin pregnancy in Indian literature and hence this study has its own real importance.

Aim of the study

1. To find out the incidence of twin pregnancy in our hospital.
2. To find out the perinatal mortality rate and morbidity rate in twin pregnancy.
3. To study factors (maternal/ fetal/ placental) influencing neonatal outcome in twin pregnancy

Materials and Methods

A retrospective study was conducted from Jan 2015 to Jan 2014 Mac Gann Government general hospital.

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During this period there were 2643 deliveries of which 48 twin pregnancy and 8 were triplets. The study was approved by the ethical committee of our hospital. Details of obstetric history were noted from case sheet. Obstetric complications were looked and noted. Details of twin babies after birth with regard to maturity date of birth, time of birth, birth weight, presentation, mode of delivery, indications for NICU admissions were recorded from case sheet. Birth weight discordance and inter-twin time interval were recorded. An examination detail of the placenta which was done to determine the types of placenta was collected from case sheet. Zygosity is also determined on the basis of USG records from case sheet. NICU admitted babies, records of neonatal complications, course in NICU, risk factors,

investigations done, records were collected from NICU case sheets

Inclusion Criteria - Live and still born babies (both twins) with gestational age more than or equal to 28 weeks or if gestational age was not known then weight more than 1000 gms were included in the study, early neonatal deaths and morbidity were included this study.

Exclusion Criteria - babies born outside this hospital and dying in the hospital NICU were excluded from the study.

Statistical Analysis- Paired t test was used to see the statistical significance

Results

During this period there were 2643 deliveries occurred out of which 48 were twin pregnancy and 5 were triplets.

Table 1: Frequency of mozygous and dizygous twin pairs

Zygosity	Total no. of birth	Frequency/ 1000 live birth
Monozygous	11	4.2/1000
Dizygous	37	14.2/1000
Total	48	

From the above table it is clear that frequency of monozygotic twins is 4.2/1000 live birth and dizygous is 14.2/1000 live births

Table 2: Percentage of antepartum single and both fetal losses in twin pregnancy

Antepartum fetal loss	Total no. of twins pair	Percentage
Single fetal loss	9	18.7
Both fetal loss	1	2

Above table shows single fetal loss in twin pregnancy is 18.7% where both fetal loss is 2%.

Table 3: Comparison between still birth rate, early neonatal death rate and perinatal mortality rate of first and second twin

	First twin	Rate per 1000 live birth/ live birth	Second twin	Rate per 1000 live birth/ live birth
Still birth	5	52.0	6	62.5
Early neonatal death	1	10.4	5	52.0
Perinatal death	6	62.5	11	114.5

From the above table still birth rate, early neonatal death rate and perinatal death rate is more in second twin than first twin. Average birth weight in twin pregnancies is 1.81 kg.

Table 4: Distribution of twin pair and perinatal death according to gestational age

Gestational age in week	No. of twins pair	Total Perinatal death	Percentage of Perinatal death
28	1	1	100
30	8	5	31
32	3	----	----
34	11	5	22.7
36	11	4	18.1
38	14	2	7.1
Total	48		

From the above table perinatal death increases as the gestational age decreases

Table 5: Distribution of twin babies, Preterm births, IUGR babies, weight discordance and Perinatal death according to Zygoty

Zygoty	Monozygous	Dizygous
Total pair	11 (22.9%)	37 (77.0%)
Preterm labour (no. of twin pregnancy)	6 (54%)	25 (67%)
Total no. of IUGR babies	20 (90.9%)	62 (83.7%)
Total no. of pair with weight discordance > 25%	6 (54.5%)	8 (10.8%)
Perinatal death	50%	9%

Table 6: Distribution of LBW Babies in twin and Singleton Pregnancy

Type of pregnancy	Total no. of babies	No of babies weight <2.5 kg	Percentage
Twin	96	82	85.4
Singleton	2595	779	30

P<0.05

From the above table it is clear that LBW babies are 3 times more common in twin pregnancy than singleton pregnancy

Discussion

Frequency of mozygous and dizygous twin pairs

Talsania et al [1] has reported twin pregnancy incidence in rural communities of Gujarat at 10.10 per 1000 live birth. In contrast, dizygotic twinning rates vary greatly among population from 4 -50 per 1000 live births. John P Cloherty (2004) [6], the rate of monozygotic twinning has remained relatively constant 3.5/1000 & dizygotic twinning is approximately 10/1000 live birth.

Mc Carthy BJ Suchs [7] reported that monozygotic twinning occurs at fairly constant rate of 3.5/1000 live birth . In contrast, dizygotic twinning rates vary greatly amount population from 4-50/1000 live birth. William 21st edition [8] mentioned that frequency of monozygotic twin birth is relatively constant worldwide approximately 1 per 250 births while incidence of dizygotic twinning varies. In the present study incidence of twin pregnancy is 18/1000 live birth,

incidence of monozygotic twins is 4.2/1000 live birth and incidence of dizygotic twin is 14.2/1000 live birth.

Percentage of antepartum single and both fetal losses in twin pregnancy.

Benirschke K and D'Alton M E[5] showed that frequency of single demise is 0.5% - 6.8%. Rydhstrom [9] reported that both fetuses died in 0.5% in twin pregnancy. Present study shows single fetal loss in twin pregnancy is 18.7% in which both fetal losses are 2%.

Comparison between still birth rate, early neonatal death rate and Perinatal mortality rate of first and second twin.

John P Cloherty (2004)[6] mentioned that the second twin is at greater risk for perinatal death being more prone for malpresentation (35-40%of second presenting

verses 15-20% of first twin are non vertex), cord compression, asphyxia and perinatal depression.

Nkata M (1999)[10] suggested that Perinatal mortality in twin gestation was high (141/1000) and affected mostly 2nd twin (72%).

Sheay W (2004)[11] stated that Perinatal mortality was 37% higher in second-born twin than first born.

J.R. Srivastavan[12] Perinatal mortality is more in second twin.

In the present study first twin - still birth rate is 52/1000 live birth, early neonatal death is 10.4/1000 live birth Perinatal death is 62.5/1000live birth. And in second twin still birth rate is 62.5/1000 live birth, early neonatal death is 52.0/1000 live birth, Perinatal death is 114.5/1000 live birth.

Distribution of twin pair and Perinatal death according to gestational age

Williams, 17th ed [13] also stated that, preterm birth is major reason for increased risk of neonatal death and morbidity in twins. Newton W Keital D [14] mentioned that average birth weight in twin birth is 2.39kg

Houlten MCC [15] stated that growth restriction is common in twin pregnancy and rate vary from 25%-30%

In the present study increased mortality is seen in preterm babies.

Distribution of twin babies, preterm births, IUGR babies, weight discordance and Perinatal death according to zygosity

Talsania et al [1] has reported twin pregnancy incidence in rural communities of Gujarat at 10.10 per 1000 live birth.

Williams [13] stated that degree of IUGR in monozygotic twins is likely to be greater than dizygotic twins. Williams [13] stated that monozygotic twin pair were more discordant in size than dizygotic twin pairs.

In the present study preterm labour is 54%, IUGR is 90.9%, weight discordance is 54.5% and Perinatal death is 50% in monozygous twin and preterm labour is 67%, IUGR 83.7%, weight discordance is 10.8% and Perinatal death is 9% in dizygous twin.

Distribution of LBW Babies in twin and Singleton Pregnancy

Szekven H.O [16] mentioned that 55%were low birth weight babies. Adam C Allen AC[17] perinatal death and significant perinatal mortality occurred in infant weighing <1500gms or < 32 weeks of gestation

In the present study LBW of singleton pregnancy is 30/1000 live birth and 85.4/1000 live birth in twin pregnancy.

Conclusion

Incidence of twin pregnancy is increasing day by day. It is seen more in dizygotic than in monozygotic type due to increased use of ovulation drugs and artificial reproductive technique. Perinatal mortality in twins is almost double than that of singleton pregnancy, due to preterm births, congenital malformation and complications associated with twin pregnancy.

Risk of single fetal loss in twin pregnancy is significantly high when compared to both fetal losses. Perinatal mortality rate in 2st twin is double compared to first twin due to inter twin delivery time which causes asphyxia of the second twin.

Average birth weight in twin pregnancy is 1.81kg, which is the most common factor for mortality and morbidity in twins. Frequency of IUGR in twin pregnancy is very high.

Perinatal mortality increases as the gestational age decreases, due to complications related to low birth weight. Perinatal mortality is 5 times more in monochorionic diamniotic placenta than in diamniotic dichorionic placenta, as complications like twin to twin transfusion, conjoint twins, intra uterine fetal demise and others are associated more in monochorionic placenta. IUGR babies are more in monochorionic than in dichorionic placenta. Mortality and morbidity rapidly increases as the inter twin delivery time increases and goes beyond 15 min. So it should be ideal to keep intertwin delivery time less than 15 min and definitely not beyond 30 min.

Abbreviation Used: NICU- Neonatal intensive care unit, IUGR- Intrauterine growth retardation, USG – Ultrasonography

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