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A Retrospective study of neonatal outcomes in twin gestation admitted to neonatal intensive care unit at a tertiary care hospital in Mandya

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Abstract

Introduction: The number of multiple gestations has increased significantly in the past two decade. Multiple pregnancies has a global impact on both maternal and perinatal risk. Despite advances in perinatology, the perinatal mortality rate among twins remain as high as seven times as singleton pregnancies, in triplets and higher order pregnancies. The main causes of adverse neonatal outcomes are related to prematurity, low birth weight, fetal growth restrictions, birth asphyxia and congenital malformation.

Objectives: To describe the neonatal outcome of twins admitted to NICU in a tertiary care hospital.

Methods: Retrospective record based study done in NICU, MIMS Mandya during one year period from June 2020 - May 2021. All twin babies >28weeks admitted to NICU during the study period were included. Triplets or higher order multiple gestation were excluded.

Results: A total of 70 babies were included in the study. Male to female ratio was 1:1.2. Inborn constituted for 80% (n=56) of study subjects. Majority of admission was for prematurity, low birth weight and respiratory distress. There were 11 pairs of twins born to covid positive mothers. But none of the babies were covid positive. Prematurity accounted for 72% (n-50). Fetal discordance was seen in 7 pairs of twins. Birth asphyxia was seen in 7% of cases. TTNB (21%) was the major respiratory morbidity. Neonatal hyperbilirubinemia accounted for 56% (39babies). Hypoglycemia, hypocalcemia was seen in 16% and 28% respectively. Sepsis accounted for 27%. Survival rate was 89%. Morbidities were seen more in the 2nd twin.

Conclusions: Twin gestation increases the risk for adverse neonatal outcome due to prematurity, low birth weight. Prompt antenatal care and timely intervention is required to avoid these complications.

Keywords: Twin gestation, prematurity, hyperbilirubinemia

Introduction

The number of multiple gestations has increased significantly in the past two decade. This change is

attributed to an increase in the use and success of assisted reproductive technologies.[1]

Multiple pregnancies have a global impact on both maternal and perinatal risk. Although twin gestation occur in approximately 1 of 80 pregnancies, corresponding to 2.6% of all newborns, they account for 12.2% of preterm births and 15.4% of neonatal deaths.[2]

Despite advances in perinatology, the perinatal mortality rate among twins remain as high as seven times than singleton pregnancies, in triplets and higher order pregnancies. The main causes of adverse neonatal outcomes in multiple pregnancies are related to prematurity, low birth weight, fetal growth restrictions in utero, birth asphyxia, birth trauma, intrauterine fetal death, and congenital malformations.[3]

Observational studies showed that the second twins are particularly at higher risk of perinatal death than the first twins. The second twin is more likely to have lower Apgar scores, less favorable umbilical arterial or venous parameters, a higher incidence of respiratory distress syndrome, a higher need for intubation, and a higher perinatal mortality.[4]

Understanding the perinatal consequences of multiple pregnancies becomes increasingly helpful in facilitating resource allocation and closer developmental surveillance for infants at risk

Methods

Retrospective observational record based study carried out in Mandya Institute of Medical Sciences, Mandya, Karnataka.

Study Period: Case records of twin gestation neonates admitted in NICU during one year period from - June 2020 to May 2021 was analyzed using pre-defined proforma.

Inclusion Criteria: Twin babies with gestational age >28weeks admitted to NICU during the study period

Exclusion criteria:Triplets or higher order multiple gestation. Incomplete case records.

Analysis: From the case records, gestational age, onset of disease in days, sex, birth weight, inborn/outborn cases, details regarding chorionicity, gestational age, complications , outcome was recorded for analysis using Microsoft excel. Data analysed using SPSS software. Variables studied will be reported as mean, range and standard deviation (SD). P values of <0.05 will be considered statistically significant.

Results

A total of 35 twin pairs (n=70) were admitted during the above mentioned study period. Majority(80%) were inborn and 20% were outborn babies. Among the 70 twin babies, 31(44%) were males and 39(56%) were female babies.

According to gestational age, preterm babies were in predominant numbers in the study constituiting 71%. In the study, 40(57%) were appropriate for gestational age and 30(42%) were small for gestational age babies.

Maternal risk factors were noted among 7(20%) mothers. Among risk factors GDM and hypertensive disorders were predominant. Other risk factors included PROM, anaemia and preterm labour. Among these 35 pairs of twins, 11 mothers were SARS-CoV-2 positive during the time of delivery making 22 babies being born to SARS-CoV-2 positive mothers. However, none of the babies tested positive for SARS-CoV-2 and were all RTPCR negative done at 24 hours and day 5 of life.

Normal vaginal delivery was the mode of delivery in 38 babies (54%) whereas 32(45%) babies were delivered by caesarean section. As the study was done in a tertiary referral unit, there were higher rates of C

section. Majority of the twin babies were born with low birth weight. Among the 70 twin babies, 42 were low birth weight (1.5-2.5kg) and 16 were very low birth weight babies (1.0-1.5kg). Twin discordancy was seen among 7(20%) twin pairs.

Perinatal asphyxia was noted in 7% (n=5) of babies, among which 4 babies were second twin. Major indication for admission was prematurity, low birth weight and respiratory distress. In twin babies presenting with respiratory distress, 6 had hyaline membrane disease (RDS), 4 had meconium aspiration syndrome and 21 were diagnosed with transient tachypnoea of newborn.

Among 70 twin babies, 15(21%) developed early onset neonatal sepsis. Gram negative organism E coli were predominant. 8 babies had late onset sepsis. Hyperbilirubenemia was noted in 39(56%) babies. Major risk factors for hyperbilirubenemia in the study group were ABO incompatibility and prematurity. All babies were treated with phototherapy as the mode of treatment and none requiring exchange transfusion.

Among metabolic abnormalities, hypoglycaemia was noted in 16%. Among twins with hypoglycaemia, 86% were asymptomatic, 14% presented with neonatal seizures. 2 babies showed resistant hypoglycaemia. Hypocalcemia was noted in 28 %(n= 20) of the neonates in the study group, out of which 6 neonates had late onset hypocalcemia.

Mortality was 11% (n=8) in the study population.

Discussion

Multiple gestations are regarded traditionally as unfavorable, probably due to poor perinatal outcome, associated morbidity and mortality and long term developmental issues. Twin pregnancies are high risk pregnancies requiring multidisciplinary approach and special care in their management.

Study done by Gajera et al. and Santana et al. showed the gestational age of delivery around 33-36 weeks, result of which are similar to our study owing to the premature delivery of twin babies.[5,6]

Our study showed majority of the twin pairs were delivered by normal vaginal delivery(54%) as compared to 45% of twins being delivered by caesarean section in contrary to study done by Bhalla S et al. which concluded that majority of the twin pairs in their study were delivered by caesarean section(54%). [7]

With respect to the ongoing SARS-CoV-2 pandemic, it was noted in the present study that 11 twin pairs were born to SARS-CoV-2 positive mothers at the time of delivery and postnatal period and none of the baby was tested positive postnatally excluding the transplacental transfer of the disease.

Many studies including studies done by Lata Singh et al., Ri-Na Su et al. showed the most common maternal risk factors in twin gestation being anemia, hypertensive disorders, gestational diabetes mellitus similar to the maternal risk factors in our study accounting for 20%.[4,8]

Santana et al., Bhalla et al., and Konar et al., in their studies have concluded the common complications and morbidities in twin pairs being prematurity, perinatal asphyxia, intrauterine growth restriction, hyperbilirubenemia and neonatal sepsis results of which are similar to our study.[6,7,9]

In our study, perinatal asphyxia was 7%, similar to study done by Zulfiqar A et al. with incidence of perinatal asphyxia of 9.9%. However, Konar et al., recorded 25% of perinatal asphyxia in their study.[9,10]

Hyperbilirubenemia was the major morbidity seen in our study. Studies done by Bhalla S et al. and Zulfiqar A et al. Showed results comparable to the present study.[7,10]

Most common metabolic complications in our study were hypoglycaemia and hypocalcaemia. There were not many studies in twin gestation to compare the results with our study. However, these complications were attributed to prematurity and growth restriction.

Mortality of the twin pairs in our study was 11% which was less compared to other studies. Major cause for mortality in our study was prematurity and very low birth weight.

The limitation of the study was small sample size, no available data on chorionicity and comparison between first and second twin.

Conclusion

Twin gestation is associated with multiple perinatal morbidity and requires multidisciplinary approach. Most of the complications are preventable. Effective antenatal care, early detection of fetal and maternal risk factors, increased rest, and nutritional supplementation along with thorough intranatal and postnatal vigilance would reduce the perinatal morbidity and mortality in twin deliveries.

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