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A STUDY TO EVALUATE THE CLINICAL PROFILE OF MULTIPLE GESTATIONS: A HOSPITAL BASED SURVEY

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Abstract

Background: Monochorionic twins showed increased incidence of discordant growth as compared to dichorionic twins. Studies have reported fivefold mortality of twins in comparison with singleton pregnancy. In this a prospective study is done to assess the perinatal, neonatal mortality and morbidity in multiple gestations. Zygosity determines the degree of risk of chromosomal abnormalities in each fetus of a multiple gestation. The risk for aneuploidy in each fetus of an MZ pregnancy is the same as a singleton pregnancy, and except for rare cases of genetic discordancy, both fetuses are affected. In a DZ pregnancy, each twin has an independent risk for aneuploidy, and therefore has twice the risk of having a chromosomal abnormality compared with a singleton.

Material and methods: This prospective observational study was conducted in the Department of Paediatrics Darbhanga Medical College and Hospital, Darbhanga Bihar India. The time period of the study from May 2019 to feb 2020. The total number of multiple gestation 160 include in this study.

Results: Total 160 twins were studied, out of which preterm deliveries constituted 80.6% of all deliveries. Most of the mothers were between 24 to 30 year age group 70(43.8 %) followed by 18 to 24 year 55 (34.4 %) and most of them were primi 97(60.6%) and followed by gravid 2 was 54 (33.8%). Out of 160 patients 29 patient s was family history of twining in 18.1% of the study group. Assisted reproductive techniques such as clomiphene cirate,IUI and IVF were used by 19.4% of couples. Dichorinic diamniotic twins accounted for 84.4% and Dichorinic triamniotic 2.4 % of the total multiple deliveries. Normal Vaginal delivery was done for 65.6% of twins and LSCS for 34.4%.

Conclusion: Most common type of delivery was vaginal delivery (65.6%) followed by LSCS (34.4%).Out of the variables studied, significant influence on neonatal mortality was seen only with discordant twins

Introduction

Twin pregnancies account for 2 to 4% of the total number of births.[1–6] Spontaneous twin pregnancy rates vary worldwide. The prevalence rates range from less than 8 twin pregnancies per 1,000 births in the East, Southeast and Southern Asia, India, and Oceania, 9-16 per 1,000 births in the United States and Latin America, to 17 or more per 1,000 births in Africa.[7] The highest rates of twin pregnancies are found in Nigeria and the lowest rates occur in Japan.[8] This difference is mainly due to dizygotic twin pregnancies, since the prevalence of monozygotic pregnancies is practically constant, ranging from 3.5 to 4 per 1,000 births.[7,8] Twin pregnancy rates have increased in the past 30 years, particularly in high-income or middle-income countries, owing to a more advanced maternal age to become pregnant, a decline in fertility and an increased use of assisted reproductive techniques.[2–4] It is well-known that twin pregnancy is associated with higher maternal and perinatal risks. The maternal adaptation to a twin pregnancy leads to several complications. Maternal death (MD) associated with a twin pregnancy is 2.5-fold higher than in a singleton pregnancy.[4] The rate of perinatal mortality is two to three times higher in twins than among singleton newborn infants, primarily due to preterm birth, fetal growth restriction (FGR), low birth weight (LBW) and intrapartum anoxia.[9,10] Maternal morbidity and mortality associated with twin pregnancy have not been appropriately discussed in the literature, since there are few studies on the topic. The few existing studies have methodological limitations, and a small number of cases.[1–3,11] Studies on mortality and morbidity are rare, but even rarer are studies that associate twin pregnancy with the new concepts of severe maternal outcome (SMO) and maternal near-miss (MNM). The objective of the present study is to introduce aspects associated with the epidemiology of twin pregnancy, highlighting not only the clinical aspects, already very well described in the literature, but also maternal and neonatal morbidity and near-miss issues that are much less studied.

Dizygotic pregnancies are the majority and occur spontaneously due to an increased concentration of follicle-stimulating hormone (FSH) in the woman.[6] Therefore, the risk factors for its occurrence are: geography (it occurs more frequently in countries with milder climate),[6] ethnicity (black ethnicity),[8] multiparity,[6,8]

advanced maternal age (ovarian hyperstimulation due to increased gonadotrophins between the ages of 35 and 39 years old),[5,6,8] low socioeconomic condition,[8] use of oral contraceptives,[8] family history (7–15% of the population have a dominant gene for twin pregnancy)[6,8] and use of assisted reproductive techniques.[5,6,8] Monozygotic pregnancies occur in 30% of twin pregnancies and are widely determined by genetic factors. In vitro fertilization is a risk factor for monozygotic pregnancies, since the embryo procedures may generate an alteration in the zona pellucida.[8,12–14]

Contrary to dizygotic pregnancies, which are always dichorionic, the chorionicity in monozygotic pregnancies is determined by the time of the division of both cell masses. Should the division occur in the first 72 hours after the fertilization, the pregnancy is dichorionic and diamniotic. Should the division occur between days 4 and 8, the pregnancy is monochorionic and diamniotic. Should the division occur after the eighth day, the pregnancy is monochorionic and monoamniotic.[6,12]

About 75% of the monozygotic pregnancies are monochorionic and, among the monochorionic pregnancies, 2% are monoamniotic.[13,15] The chorionicity is evaluated by an ultrasonography performed early in the pregnancy, within the first 13 weeks of gestation. The lambda sign, typical of dichorionic pregnancies, is detected.[12,16] It is important to identify the chorionicity, owing to the occurrence of complications that are most commonly associated with monochorionic pregnancies: abortion (3 times more frequent); congenital malformations and chromosomal disorders, which occur in 2% of the twin pregnancies; minor malformations, which have an incidence of 4%; weight discordance; preterm birth and LBW, consequently with increased perinatal mortality and morbidity, which are 3 to 10 times higher in monochorionic pregnancies due to the chorionicity.[13-16]

Materials and methods

This prospective observational study was conducted in the Department of paediatrics Darbhanga Medical College and Hospital, Darbhanga, Bihar India. the time period of the study from may 2019 to Feb 2020. The total number of multiple gestation 160 include in this study.

Inclusion criteria:

All the women with multiple pregnancy completing 28 weeks of gestation with or without Medical and obstetrical complications and had delivered in our hospital, were included in this study.

Exclusion criteria:

Those multiple pregnancies who were admitted for observation and discharged and did not come for follow up.

Methodology

The patients fulfilling the eligibility criteria were followed from admission to discharge, detailed analysis of the medical report of these cases, both mother and neonates. The data included demographic details, present and past history, family history, normal delivery and Lower segment caesarean section. Multifetus delivered in the hospital, if admitted in the neonatal unit was also followed up to their discharge or for 7 days which was shorter. Patients requiring transfer to other Department of the hospital were also followed in the same way. Necessary information was collected in a pre-designed data sheet and finally the finding were compiled and analysed.

Statistical analysis

The recorded data was compiled and entered in a spreadsheet computer program (Microsoft Excel 2010) and then exported to data editor page of SPSS version 19 (SPSS Inc., Chicago, Illinois, USA). Descriptive statistics included computation of percentages and means.

Results

Table 1: Distribution of the patients according to maternal age

Maternal age	N= 160	Percentage
18-24	55	34.4
24-30	70	43.8
Above 30	35	21.8

Table 2: Distribution of the patients according to gravida

Gravida	Count	Percentage
Primi	97	60.6
G2	54	33.8
≥G3	9	5.6

Table 3: Distribution of the patients according to twins family history

Family History	Count	Percentage
Yes	29	18.1
No	131	81.9

Table 4: Distribution of the patients according to the use of assisted reproductive technique

Assisted Reproductive technique	Count	Percentage
Yes	31	19.4
No	129	80.6

Table 5: Distribution of the patients according to types of delivery

Types of delivery	Count	Percentage
Normal vaginal delivery	105	65.6
Lower segment cesarian section	55	34.4

Table 6: Distribution of the patients according to types of Placenta

Placenta	Count	Percentage
MCMA monochorionic monoamniotic	6	3.8
MCDA monochorionic diamniotic	15	9.4
Dichorinic diamniotic DCDA	135	84.4
DCTA Dichorinic triamniotic	4	2.4

Table 7: Distribution of the patients according to number of Fetus

No. of Fetus	Count	Percentage
Twins	145	90.6
Triplets	15	9.4

Discussion

Monozygotic (MZ) twins originate and develop from a single fertilized egg (zygote) as a result of division of the inner cell mass of the blastocyst. MZ twins are of the same sex and are genetically identical. Dizyotic (DZ) or fraternal twins originate and develop from two separated fertilized eggs. Triples and higher-order pregnancies (quadruplets sextuplets, septuplets, etc.) Can be mutizygotic, MZ and identical, or rarely, a combination of both. A major portion of the placenta and the fetal membranes originate from the zygote. The placenta consists of two parts: (1) a larger fetal part derived from the villous chorion and (2) a smaller maternal part derived from the deciduas basalis. The chorionic and amniotic sacs surround the fetus. The chorion to from at day 3 after fertilization, and the amnion begins to form between day 6 and day 8. The two membranes eventually fuse to form the amniochorionic membrane.

MZ twins commonly have one placenta with one chorion and two amnions (monochorionic diamniotic) or rarely, one placenta with one chorion and one amnion (monochorionic monoamniotic). If early splitting occurs before the formation of the chorion and amnion (day 0-3), MZ twins can end up having two placentas with two chorions and two amnions (dichorionic diamniotic). DZ twins always have two placentas with two chorions and two amnions (dichorionic diamniotic); however the two placentas and chorions may be fused.

The rate of MZ twinning has remained relatively constant (3.5 per 1,000). The rate of DZ twinning is approximately 1 in 100 births. This rare is influenced by several factor such as ethnicity (1 in 500 Asians, 1 in 125 in whites, and as high as 1 in 20 in Afeican populations) and maternal age. The frequency of DZ twinning has a genetic tendency that is a affected by the genotype of the mother and nor that of the father [17].

There were 86.8% dichorionic and 13.2% monochorionic twins which consistent with the study Mahendro et al. where 67% dichorionic twins and 33% monochorionic twins[18].

In case of triplets all cases were trichorionic and triamniotic which were similar to that of the study of Mhendra et al.[18].

Zygosity determines the degree of risk of chromosomal abnormalities in each fetus of a multiple gestation. The risk for aneeuploidy in each fetus of an MZ pregnancy is the same as a singleton pregnancy, and except for rare cases of genetic discordancy, both fetuses are affected. In a DZ pregnancy, each twin has an independent risk for aneuploidy, and therefore has twice the risk of having a chromosomal abnormality compared with a singleton.[19] Diagnosis is usuallymade between 17 and 26 weeks' gestation, but the process may occur as early as 13 weeks. Severe cases of TTTS have signs before 20 weeks' gestation and have a mortality of 60% to 100%. Diagnostic criteria for TTTS include monochorionicity, pkolyhydramnios in the sac of one twin (the recipient) and oligohydramnios in the sac of the other twin (the donor), umbilical cord size discrepancy, cardiac dysfunction in the polyhydramniotic twin, abnormal umbilical artery and/ or ductus venosus Doppler velocimetry,and significant growth discordance (>20%).[20]

There were 86.8% dichorionic and 13.2% monochorionic twins which consistent with the study Mahendro et al. where 67% dichorionic twins and 33% monochorionic twins.[18]

In case of triplets all cases were trichorionic and triamniotic which were similar to that of the study of Mhendra et al.[18] In the present study, 18.1% of mother showed family history of twin pregnancy compaired to 19% and 30% in studies by Chowdhury and Sultana respectively.[21,22] Most of the babies were delivered preterm (34.4% by ceasarean section and 65.6% vaginal delivery). But in the study of Sultana et al. vaginal delivery 30% and cesarean section 70%. Higher rate of cesarean section was due to non-vertex presentation of first twin (34.1%).[23] The present study showed that about 39.4% of the women both twin and triplets were multigravida which was less to the study report of Spellacy et al. where frequency of twining multigravida was 84.2%.[24]

The average gestation at which twin deliveries occurs was 35.3 weeks and triplets was 33.2 weeks in our study and in the study of Mahendro et al. showed the average gestation of twin 35 weeks and for triplets it was 33 weeks.[18]

Conclusion

Most common type of delivery was vaginal delivery (68%) followed by LSCS (23%). Out of the variables studied, significant influence on neonatal mortality was seen only with discordant twins.

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