A comparative study of twin and triplet pregnancy

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ABSTRACT

Objectives: Multiple pregnancy now warrants special attention from the obstetrician. The incidence of multiple pregnancy had increased during the last 15 years. Multiple pregnancy is a high-risk pregnancy since it is associated with increased perinatal morbidity and mortality. In addition, almost every maternal and obstetrical problem occurs more frequently in multiple than in singleton pregnancies. In view of the above we designed our study.

Methods: This was a comparative and descriptive retrospective study conducted during the period January 1985 to December 1999 at Wad Medani Teaching Hospital, Wad Medani, Sudan. The study included the follow up of 597 twin pregnancies and 30 triplet pregnancies. The variables used were the age, the parity, the incidence, the sex of neonates and their weights. The study also concentrated on the mode of delivery, and it highly considered the maternal and perinatal complications.

Results: During the period of the study the total number of pregnancies received was 44605. Twin pregnancies accounted for 597/44605 (1.3%), while triplet gestation showed an incidence of 30/44605 (0.1%). In twin pregnancy ovulation occurred spontaneously in 43/597 (7.2%) and it was induced in 167/597 (28%). On the other hand, ovulation occurred spontaneously in triplets 19/30 (63.3%) and it was induced in 11/30 (36.7%). The common maternal complication was pre-term labor, which affected 35.5% in twins and 76.7% in triplets. The rate of cesarean section was 53.1% in twins while in triplet it was 83.3%. The mean birth weight in twin pregnancy was 1890 gm for males and 1780 gm for females. In triplet gestation, the mean birth weight was 1760 gm for males and 1720 gm for females. The maternal mortality rate was 35.8/100.000 live births in twin pregnancies while it was 99/100000 in triplet gestation. The perinatal mortality rate was 115/1000 for twin and 223/1000 for triplet pregnancy.

Conclusion: Multiple pregnancy is a high-risk pregnancy, and to decrease its maternal and fetal complications it must be diagnosed early. It should also receive almost antenatal care and care at delivery. Early hospitalization plays an important role of reducing these complications. It must be treated by one obstetrician.

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With the decline in perinatal morbidity and mortality from other causes, multiple pregnancy now warrants special attention from the obstetrician. Multiple pregnancy is now a common obstetrical problem. In addition, almost every maternal and obstetrical problem occurs more frequently in multiple pregnancies and there are a number of intrapartum considerations.

Methods. This was a comparative, prospective and descriptive study. It was carried out in Wad Medani Teaching Hospital, Wad Medani, Sudan. The study was conducted during the period January 1985 to December 1999. The study was designed to include any patient with twin and triplet gestation, presenting during pregnancy or during labor. Patients who presented during pregnancy were

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diagnosed clinically and all were confirmed by ultrasound (US). Patients received during pregnancy had a proper antenatal care, they were hospitalized early and they received the utmost care at delivery. Patients received for the first time during labor were diagnosed either in the first stage of labor or during the second stage of labor. The variables used for comparison between the 2 groups include the age of the parity, time of diagnosis and types of ovulation. They include also time of delivery and the mode of delivery. Special attention was offered for the gender of the neonates and their birth weights. The study was very much concerned with the maternal and fetal complications of the 2 groups.

Results. During the period January 1985 to December 1999 the total number of pregnancies was 44605. During the same period, the number of twin pregnancies was 597 giving an incidence of 597/44604 (1.3%). Triplet gestation during the same period was 30 giving an incidence of 30/44605 (0.1%). In twin pregnancies, ovulation occurred spontaneously in 430/597 (72%) of cases while it was induced either by clomiphene citrate or by human menopausal gonadotrophin in 167/597 (28%). In triplet pregnancy ovulation occurred spontaneously in 19/30 (63.3%) while it was induced by the same methods in 11/30 (36.7%). **Table 1** shows the distribution of twin and triplet pregnancies according to the age. It was clear that most of the cases of twin pregnancies occurred between the age of 20-40 (80.4%). We had 14.6% of cases after the age of 40 and only 5% of cases occurred before the age of 20. This pattern of distribution was similar in triplet pregnancy with 80% between the age of 20-40, we had 5 cases after the age of 40 and only one triplet pregnancy occurred before the age of 20. **Table 2** shows the distribution of twin and triplet pregnancies in relation to parity. The majority of twin pregnancies occurred in grand multipara (36%) and 25.1% of twin pregnancies occurred in primiparae. Concerning triplet pregnancies 43.3% of cases occurs in primiparae while 23.4% occurs in grand multipara. We had only one case of triplet pregnancy in para.[2] Multiple pregnancy in this study was diagnosed clinically and all cases were confirmed by the US. The majority of cases (518/597 [86.8%]) were diagnosed either between the 10 and 14 weeks gestation or at 20-24 weeks gestation. The remaining cases of multiple pregnancy were diagnosed during the first stage or second stage of labor. **Table 3** shows the distribution of maternal and fetal complications among twin pregnancies and triplet pregnancies.

Table 1 - Distribution of twin and triplet pregnancy according to age.

Age (years)	Twin pregnancy		Triplet pregnancy	
	n	(%)	n	(%)
< 20	30	(5)	1	(3.3)
20-29	18	(3)	15	(50)
30-39	462	(77.4)	9	(30)
>40	87	(14.6)	5	(16.7)
Total	**597**	**(100)**	**30**	**(100)**

Table 2 - Distribution of twin and triplet pregnancy according to parity.

Parity	Twin pregnancy		Triplet pregnancy	
	n	(%)	n	(%)
Para I	150	(25.1)	13	(43.3)
Para 2	53	(8.9)	1	(3.3)
Para 3	74	(12.4)	4	(13.3)
Para 4	105	(17.6)	5	(16.7)
Para ≥5	215	(36)	7	(23.4)
Total	**597**	**(100)**	**30**	**(100)**

Table 3 - Distribution of complications in twin and triplet pregnancy.

Complications	Twin pregnancy		Triplet pregnancy	
	n	(%)	n	(%)
Miscarriage	77	(12.9)	6	(20)
Anemia	75	(12.6)	4	(13.3)
Preeclampsia	116	(19.40	8	(26.7)
Pre-term labor	212	(35.5)	23	(76.7)
Polyhydramnios	209	(35)	20	(66.6)
Ante-partum hemorrhage	34	(5.7)	3	(10)
Post-partum hemorrhage	54	(9)	3	(10)
Congenital malformation	17	(2.8)	2	(6.6)
Maternal death	4	(0.7)	1	(3.3)
Perinatal death	137	(11.5)	29	(32.2)

Pre-term labor was the most common complication associated with twin gestation (35.5%) and triplet pregnancy (76.7%). The second common complication was polyhydramnios, which affect 35% of twins and 66.6% of triplet pregnancy. Surprisingly, the incidence of congenital malformation in 2 groups was very low. The maternal mortality rate in twin pregnancies was 35/100000 while it was 99/100000 with triplet pregnancies. The perinatal mortality was 115/1000 for twin and 223/1000 for triplet pregnancy. In twin pregnancy, the mean gestational age at delivery was 36.4 weeks (average 30-38 weeks) gestation, while in triplets it was 34.3 weeks (average 28-37 weeks) gestation. The mode of delivery in twin pregnancy was vaginally in 46.9% and cesarean section (CS) in 53.1%; only 5 of triplet pregnancies (16.7%) were delivered vaginally while the remaining 25 (83.3%) were delivered by CS. Elective CS was performed in 269 (84.8%), while the remaining 48 cases (15.2%) underwent emergency CS. Concerning the gender of the neonates in twin pregnancies we found that 669/1194 (56%) were females while 525/1194 (44%) were males, we also found that in 174 of twin pregnancies (29.1%) were both females. They were both males in 102 of twin pregnancies (17.1%). In triplet gestation females constitute 53.3% while male contributes to 46.7%. The 3 triplets they were all females in 26.6% and all males in 36.6%. The mean birth weight in twin pregnancy was 1890 gm for males and 1780 for females. It was noted that the mean birth weight in triplet gestation was 1760 gm for males and 1720 gm for females. The heaviest baby was always born first, but the remaining 2 have no specific order.

Discussion. In our study, the incidence of twin pregnancy was 1.3% while it was 0.1% in triplet pregnancy. It was clear that the twin pregnancy occurred 18 times as triplet pregnancy. The incidence of twin gestation in our study was comparable with what Nwobodo[1] found in their study (1.4%). The incidence of triplet pregnancy was far less than 0.1% found by Ho et al.[2] This difference could be explained in addition of spontaneous and assisted ovulation Ho et al[2] added multiple pregnancies of the in vitro fertilization and embryo transport. Spontaneous ovulation occurs in 72% of twin pregnancy and in 63.3% of triplet pregnancy; therefore, the difference was not significant. Ovulation in our study was assisted either by clomiphene citrate or by human menopausal gonadotrophin. Ovulation was assisted in 28% of twin pregnancies and in 36.7% of triplet pregnancy. In the study of Pons et al,[3] spontaneous ovulation occurs in 20.8%, while assisted ovulation occurs in 40.6% of triplet pregnancies. The remaining 39.6% was due to in vitro fertilization and embryo transport. The results of the study of Pons et al[3] were almost comparable with our results. In our study, the majority of multiple pregnancies occur between the age of 20-40 which comprised of 80.4% in twin gestation and 80% in triplet gestation. This distribution was similar in both groups. The distribution of cases after the age of 40 was also similar with 14.6% in twin pregnancy and 16.7% in triplet pregnancy. The same applied to cases before the age of 20 with 5% in twin and 3.3% in triplet pregnancies. Those results were comparable with what Westergaard et al[4] found in their study. He found that 77.7% of multiple pregnancies occur between the age of 20 and 40. The distribution of cases according to the parity in our study showed that 36% of twin pregnancies occurred in grand multipara, while 23.4% of triplets occur in grand multipara. This difference could be explained by the effect of age and parity of the ovaries. It was not surprising that 25.1% of cases occurs in primiparae in twin and 43.3% occurs in triplet pregnancies, since these are the cases, which suffered from infertility, and all were subjected to assisted ovulation. It was clear that the order of multiple pregnancy increases with the availability of the surge of assisted conception. Westergaard et al[4] found that the incidence of multiple pregnancy was high in grand multipara and they also found that 65.2% of cases of multiple pregnancy occurs in primiparae. This result was comparable with what we found in our study. In our department, routine US was available. We found that 86.8% of twin pregnancies were confirmed by the US either at the 10-14 weeks (35.5%) or at the 20-24 weeks gestation (53.3%). The remaining 13.2% were diagnosed either during the first stage or second stage of labor. On the other hand, 86.7% of triplet pregnancies were confirmed by the US either at the 10-14 weeks (33.3%) or between the 20-24 weeks gestation (53.8%). This illustrated that the role of US in diagnosing multiple pregnancy was very important, and it gave the same results for twin and triplet pregnancies. Groot and Buchmann[5] found that 15% of twin pregnancies were diagnosed by the US during the second trimester and the difference could be explained by the fact that Groot and Buchmann[5] was working in a hospital where the routine US is not always available. Pons et al[3] succeeded in diagnosing 82.7% of multiple pregnancy by the US and this was comparable to our results. The common complication associated with multiple pregnancy was pre-term labor, which affects 35.5% and 76% of twin and triplet pregnancies. It was clear that the occurrence of pre-term labor was highly determined by the order of multiple pregnancies. Adams et al[6] found that

pre-term labor affected 33.5% of twin pregnancy and this result was comparable with our result. Santema et al[7] concluded that pre-term labor occurred more often in triplets than in twin gestations. The second common complication of multiple pregnancies was polyhydramnios occurring in 35% of twins in 66.6% of triplet pregnancies. This explained the fact that polyhydramnios was significantly higher in high order multiple pregnancies. Fisk et al[8] found that polyhydramnios affected 33.6% of twin pregnancy and it was found in 61.8% of triplet gestation. These results were comparable with what we found in our study. Pre-eclampsia occurs in 19.4% of twin pregnancies and complicated 26.7% of triplet pregnancies. This showed that pre-eclampsia increase with the number of fetuses. Fuchi et al[9] found that pre-eclampsia affect 59.61% of twin pregnancies. This result was high compared with what we found. It could only be explained by the geographical and ethnic predisposition. He also found that the incidence of pre-eclampsia was determined by the order of multiple pregnancy. Anemia (predominantly folic acid deficiency) occurs in 12.6% of twin gestation and in 13.3% of triplets with no marked differences. Lipitz et al[10] showed that anemia occurs in 13.1% and 14.1% of twin and triplet pregnancies. These results were comparable with what we found in our study. The incidence of threatened miscarriage was difficult to estimate in our study since only cases in which the pregnancy continued were included in the study. Antepartum hemorrhage and primary postpartum hemorrhage affect the twin and triplet pregnancy in a similar pattern. In twin pregnancy, the mean gestational age at delivery was 36.4 weeks (average 30-38), while it is 34.3 week (average of (28-37) in triplet pregnancies. It was clear that triplets were delivered 2 weeks before twins. The stretch and fetal theory could explain this, which initiates spontaneous labor. Tarter et al[11] found that the mean gestational age at delivery in twins was 35.3 weeks which does not-differs very much with our result. Ho et al[2] found a mean gestational age at delivery of 33.6 weeks in triplet and this was comparable with what we found in our study. Vaginal delivery occurred in 46.9% and 16.7% of twin and triplet pregnancies. All those triplets were diagnosed during the second stage of labor, otherwise, they should have been delivered by a CS. The rate of CS in twin pregnancies was 53.1%, (84.8% of those were elective CS, while remaining 15.2% were emergency CS). Caesarean section was performed in 83.3% of triplet pregnancies most of them being elective CS. Laros and Dattel[12] found that 68% of twins were delivered vaginally while the remaining 32% were delivered by C/S. these differences could be explained by the fact that in our study the number of cases undiagnosed during pregnancy is not few. Pons et al[3] found that the rate of C/S in triplets was 90%; hence, their result was comparable with our results. In our study, 56% of twins were females and 44% were males. We found that the twins were both females in 17.1% and they were both males in 27.1%. In triplet, pregnancies 53.3% were females and 46.70% were males. All triplets were all males in 36.6% and they were all females in 26.6%. In the literature, there were no similar studies. The mean birth weight for twins was 1890 gm for males and 1780 gm for females. In triplet pregnancies, the mean birth weight was 1760 gm for males and 1720 gm for females. It was clear that twins were heavier than triplets. Adams6 found that the mean birth weight for twin was 1942 gm for males and 1718 gm for females. The results were comparable with our results. Santema et al[7] found that the mean birth weight in triplets was 1478 gm. This could be explained by the fact that the mean gestational age at delivery in his study was 32 weeks gestation, while in our study it was 34.3 weeks gestation.

The maternal mortality rate associated with twin pregnancy was 35.8/100000, while it was 99/100000 in triplet gestations. This illustrates that the maternal mortality increases with the order of multiple pregnancy. Lam and Ho[13] found a maternal mortality of 36.2/100000 which was comparable with our study. Kaufman et al[14] found that the maternal mortality in triplets was 92/100000 therefore the results were comparable. In twin pregnancies, the perinatal mortality rate was 115/1000, and this was similar to 107/1000 found by Kaufman et al.[14] In our study the perinatal mortality rate in triplets was 223/1000. Pons et al[3] found a perinatal mortality rate of 80/1000 in triplets and it far low than our result. Thus, could be explained by the fact that triplets in the study of Pons et al[3] were probably treated and diagnosed early. Vaginal delivery was only allowed in twin when the first presents with the head (vertex). All triplets should be delivered by elective CS. Neonatal facilities must be available and high-risk fetuses must be transfer immediately to a fetal medical center. Management of multiple pregnancies in the same hospital should be dealt with one obstetrician.

References

1. Nwobodo EL, Bobzom DN, Obed J. Twin births at university of Maiduguri teaching hospital, incidence, pregnancy complications and outcome. ***Niger J Med*** 2002; 11: 67-69.
2. Ho ML, Chen JY, Ling UP, Chen JU, Huang CM, Chang CC. Changing epidemiology of triplet pregnancy: Etiology and outcome of twelve years. ***Am J Perinatal*** 1996; 13: 269-275.
3. Pons JC, Charlemaine C, Duberevil E, Papiernik E, Frydman R. Management and outcome of triplet pregnancy.

Eur J Obstet Gynecol Reprod Biol 1998; 76: 131-139.

4. Westergaard T, Wohlfahrt J, Abay M, Melbye M. Population based study of rates of multiple pregnancies in Denmark. ***Br Med J*** 1999; 14: 775-779.
5. Groot MC, Buchmann EJ. Where there is no ultrasound: delay and failure of antenatal diagnosis of twin pregnancy. ***Trop Doct*** 2003; 33: 5-7.
6. Adams DM, Sholl JS, Haney EL, Russell TL, Silver RK. Perinatal outcome associated with outpatient management of triplet pregnancy. ***Am J Obstet Gynecol*** 1999; 180 (3 pt 1): 771-772.
7. Santema JG, Bourdrez P, Wallenburg HC. Maternal and perinatal complications in triplet pregnancy with twin pregnancy. ***Eur J Obstet Gynecol Reprod Biol*** 1996; 60: 143-147.
8. Fisk NM, Vaughan J, Talbert D. Impaired foetal blood gas status in polyhydramnios and it's relation to raised amniotic pressure. ***Fetal Diagn Ther*** 1994; 9: 7-13.
9. Fuchi I, Okumra Y, Noda K. Perinatal management of twin pregnancy. ***Acta Genet Med Gerellol (Roma)*** 1992; 41: 149-153.
10. Lipitz S, Frenkel Y, Watts C, Ben Rapcl Z, Barkai G, Reichman B. High-order multi fetal gestation- management and outcome. ***Obstet Gynecol*** 1990; 76: 215-218.
11. Tarter JG, Khoury A, Barton JR, Jacques DL, Sibai BM. Demographic and obstetric factors influencing pregnancy outcome in twin gestations. ***Am J Obstet Gynecol*** 2002; 186: 910-912.
12. Laros RK Jr, Dattel BJ. Management of twin pregnancy: the vaginal route is still safe. ***Am J Obstet Gynecol*** 1988; 158 (6 Pt I): 1330-1338.
13. Lam H, Ho PC. A comparison of pregnancy outcome between high-order multiple and twin pregnancies: Matched-pair retrospective study. ***Hong Kong Med J*** 1999; 5: 16-20.
14. Kaufman GE, Malone FD, Harvey Wilkes KB, Chelmow D, Penzias AS, D'atton ME. Neonatal morbidity and mortality associated with triplet pregnancy. ***Obstet Gynecol*** 1998; 91: 342-348.