Maternal and neonatal outcome of twin pregnancies complicated by a single intrauterine dead fetus

Mesbah M. Abdal-Khalig, *MBBS, SSCOG,*
Adekunle A. Sobande, *MBBS, FRCOG.*

The incidence of multiple pregnancy has increased pari pasu, the increase in ovulation induction and assisted reproductive techniques. At the same time, its associated maternal and perinatal complications are well documented. One of the unusual complications of the twin gestation is the single intrauterine fetal death, which occurs in the later half of the pregnancy with quoted incidence between 0.5-6.8%.[1] This condition may lead to increased maternal complications and increased perinatal morbidity and mortality for the living co-twin.[2]

The objective of this study was to evaluate the maternal and neonatal outcome in twin pregnancies complicated by a single intrauterine fetal death (IUFD) in the second half of the pregnancy at King Khalid University Hospital (KKUH), Riyadh, Kingdom of Saudi Arabia. During the study period from 1983-2000, 35 twin pregnancies complicated by single IUFD after 20 weeks of gestation were identified from the delivery logbook. Those cases where IUFD occurred during labor were excluded. Data collected from the records included maternal age, parity, blood group, antenatal complications, mode of delivery and blood loss during the delivery. Others were gestation at delivery, gestation at which single IUFD was diagnosed, time interval between diagnosis of IUFD and delivery, birth weight, sex and neonatal complications. The data were coded and entered into an IBM compatible computer. Statistical analysis was by the Statistical Package for the Social Sciences (SPSS) version 7.5 for the mean and standard deviation of quantitative variables. Out of the 35 cases collected during the study period, 30 were booked and diagnosed at the antenatal clinic while 5 were diagnosed during labor. The demographic data, obstetric complications, and fetal or placental characteristics are shown in **Table 1**. The mean maternal age was 27.74 years, while the mean gestation at diagnosis of IUFD was 29.65 weeks and delivery 34.26 weeks. There were no maternal deaths in this study, while the perinatal mortality was 11.4% with 3 deaths occurring in dizygotic twins. Pre-eclampsia and gestational diabetes occurred in 11.4% of the patients. There were no cases of maternal disseminated intravascular coagulation (DIC). Anemia and DIC was the most common neonatal complication. The incidence of monochorionic placentation was 54.2% while dichorionic was 45.8%.

This study has shown that serious maternal complications are rare while complications are increased in the surviving fetus in twin pregnancies complicated by single IUFD. The perinatal mortality of 11.4% is similar to that of twins without intra-uterine death in our hospital (10.8%), but more than double the quoted multiple births in the Scottish Stillbirth and Neonatal Death Report of 1990.[3] The main causes of death in this review were prematurity, twin to twin transfusion syndrome and sepsis. In other published studies[1,2] the neonatal and infant mortality were estimated between 6-20% the main cause being prematurity. Regarding antenatal complications, the incidences of pre-eclampsia and gestational diabetes were 11.4%. In other studies, the incidence of pre-eclampsia in twin pregnancies complicated by single IUFD varied between 37.9-86% while for gestational diabetes, an incidence of 6.8% was quoted. The relatively large number of patients in this series may in part explain this difference. Nonetheless, it is well known that

Table 1 - Demographic and obstetric data and some fetal and placental characteristics.

Characteristic	Mean	SD	n	(%)
Maternal age (years)	27.74	5.24	-	-
Gestation at diagnosis of IUFD (weeks)	29.65	5.70	-	-
Gestation at delivery (weeks)	34.26	4.53	-	-
Parity	2.46	2.19	-	-
Blood loss at delivery (mls)	404.2	264.6	-	-
Birth weight (grams)	1864.7	822.3	-	-
Placental weight (grams)	635.9	212.0	-	-
Maternal complications				
Pre-eclampsia	-	-	4	(11.4)
Gestational diabetes	-	-	4	(11.4)
Post partum hemorrhage	-	-	5	(14.3)
No complications	-	-	22	(62.8)
Cesarean section	-	-	11	(31.4)
Neonatal death	-	-	4	(11.4)
Chorionicity				
Dichorionic	-	-	16	(45.7)
Monochorionic	-	-	19	(54.3)
Neonatal complication				
DIC/anemia	-	-	3	(8.5)
Microcephaly	-	-	1	(2.8)
Cerebral infarction	-	-	1	(2.8)
Intestinal necrosis	-	-	1	(2.8)

SD - standard deviation, IUFD - intrauterine fetal death, DIC - disseminated intravascular coagulation

one of the complications of multiple pregnancy is pre-eclampsia. There were no cases of maternal DIC in this study and this finding has been reported by many others.[4] Literature search however revealed 4 case reports in which DIC developed during the antenatal period after the IUFD in multiple gestation, one which occurred after 12 weeks of a missed abortion.[5] The pathogenesis of DIC is thought to be from thromboplastin-like materials released from the dead fetus and its placenta, which may subsequently activate the extrinsic pathway of maternal coagulation system. However this activation does not result in DIC and subsequent coagulopathy as long as the natural inhibitors that is antithrombin 3, heparin co-factor 2 and extrinsic pathway inhibitors neutralize the active forms of factors 9,10 and thrombin. High-risk patients for DIC therefore will be those with a form of thrombophilia that is antithrombin 3 deficiency. It is recommended that intermittent evaluation of coagulation factors be performed in cases of twin gestation with demise of co-twin. The incidence of post-partum hemorrhage in this review was 14.3%. This complication is probably less than expected in a twin pregnancy, which is a risk factor for post partum hemorrhage. The cesarean section rate in this review was 31.4% with fetal distress the most frequent indication. In reported cases,[1,2] figures ranging between 15-93% have been quoted. In general, the cesarean section rate has increased in twin pregnancy but the evidence that this had a markedly beneficial impact on the fetal outcome is lacking.

Three (8.6%) of the surviving babies in this study had anemia and DIC, which was corrected by transfusion of blood and fresh frozen plasma. They were all from monozygotic twin gestation. Cerebral infarction occurred in one (2.8%) of the babies while figures ranging between 5-37% have been quoted in other studies.[2,6] According to recent reports,[7] this complication occurs commonly in monochorionic placentation and is a result of large artery to artery anastomosis, which allows blood to shift rapidly from one fetus to the other. Thus, when one of the twins die, the survivor may quickly exsanguinate into the dead twin, leading to hypotension and occasional cerebral palsy. In conclusion, this study has shown that maternal DIC, which is a life threatening condition; as a complication in cases of twin pregnancy complicated by a single IUFD, is rare while the perinatal mortality is high for the surviving twin. We therefore, recommend a conservative management but with careful monitoring of the living fetus and mother, in cases of twin pregnancy complicated by a single IUFD.

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From the Department of Obstetrics and Gynecology (Abdal-Khalig), Abha Maternity Hospital, and the Department of Obstetrics and Gynecology (Sobande), College of Medicine, King Khalid University, Abha, Kingdom of Saudi Arabia. Address correspondence and reprint requests to Dr. Adekunle A. Sobande, College of Medicine and Medical Sciences, King Khalid University, PO Box 641, Abha, Kingdom of Saudi Arabia. Tel/Fax. +966 (7) 2290756. E-mail: lekunle@hotmail.com

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