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Related Factors For Preterm Birth in Twins After Single Intrauterine Death：a case control study

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Research Article

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Abstract

Background Single intrauterine death in twin pregnancy has become a relatively frequent complication of twin pregnancy. Preterm delivery is one of the complications with high incidence, and is closely related to the prognosis of the surviving fetus. However, studies about preterm delivery related to single intrauterine death are limited. The purpose of this paper is to analyze the factors associated with preterm birth in twins after single intrauterine death.

Methods This was a case-control study of single intrauterine death in twins delivered at Shengjing Hospital over a 12-year period, from January 1, 2008, to November 30, 2020. We classified these cases into the preterm birth group and full-term birth group according to gestational age at birth. We selected age, gestational age at Single intrauterine death, and parity, etc, as related factors of the preterm birth group. Logistic regression analyses were performed to determine the relevance and importance of related factors and their association with preterm birth. We divided the preterm birth group into four smaller groups according to gestational age at single intrauterine death (14-19 weeks, 20-24 weeks, 25-30 weeks, and 31-36 weeks) and compared them. To exclude human intervention, we analyzed the spontaneous delivery cases as well.

Results The analysis included 175 twins (mean [SD] gestational age at single intrauterine death, 27.0 [5.8] weeks; mean [SD] gestational age at birth, 33.8 [3.2] weeks) with single intrauterine death. A total of 139 (79.4%) were cases of preterm birth. A significant risk factor associated with preterm birth was gestational age at single intrauterine death (odds ratio [OR], 2.89; 95% CI, 1.90-4.39). We found that the 14- to 19-week age group had the oldest gestational age at birth (37.25 [1.29]weeks). The length of gestation in 14-19 weeks group, 20-24 weeks group, 25-30 weeks group and 31-36 weeks group were 20.5 weeks, 11.0 weeks, 4.77 weeks and 1.12 weeks respectively

Conclusion The fetus' gestational age at single intrauterine death was a risk factor for preterm birth in their twin. The length of gestation was inversely proportional to increasing gestational age at single intrauterine death.

Background

Single intrauterine death in twin pregnancy was defined as spontaneous death after 14 weeks' gestation. Single intrauterine death in twin pregnancy has become a relatively frequent complication of twin pregnancy. The overall incidence of single intrauterine death is estimated to be up to 2.6% to 6.2% of all twin pregnancies[1-4]. The surviving twin has many complications, such as brain damage, preterm birth, and survivor of intrauterine death[1,5-7]. Among these complications, preterm birth (PTB) is a problem that cannot be ignored because of its lasting adverse effects on the surviving twin. For instance, brain damage and multiple organ immaturity caused by PTB portend a poor prognosis in the surviving twin[5]. However, to our knowledge, studies of PTB and its relationship to single intrauterine death are limited.

Therefore, the purpose of this study was to analyze factors associated with PTB in relation to single intrauterine death.

Methods

This was a retrospective case control study of all twins experiencing single intrauterine death at 14 to 36 weeks' gestation from January 1, 2008, through November 30, 2020, at Shengjing Hospital of China Medical University. Inclusion criteria included delivery between January 1, 2008, and November 30, 2020, with complete information (including maternal basic information, diagnosis and treatment information), including pregnancy outcomes. Exclusion criteria included single intrauterine death by artificial fetal reduction, miscarriage occurring before 26 weeks, or double fetal loss.

The gestational age at birth was assigned based on the first day of a woman's last menstrual period. If this date was not consistent with the date based on the earliest ultrasound (±7 days in the first trimester or ±10 days in the second trimester), the gestational age was reassigned[8]. The gestational age at single intrauterine death was estimated according to the size of the dead fetus measured via ultrasound and compared with a previous ultrasound. Chorionicity was determined by ultrasound evaluation according to the presence of the lambda or T signs and confirmed after birth[9]. If the patient did not undergo chorionic identification ultrasonography during pregnancy, the placenta was examined after delivery to determine the chorionicity[10]. Spontaneous delivery was defined as spontaneous contraction leading to labor, whether cesarean or vaginal delivery.

Information on each patient case was recorded to include the following: maternal age (year), chorionicity, the gestational age at single intrauterine death, parity, the gestational age at birth, history of fetoscopic laser photocoagulation, History of abortion, pregnancy method (including natural pregnancy and assisted reproductive techniques), fetal complications, maternal complications, premature rupture of membranes, dead fetal presentation, abnormal amniotic fluid, and spontaneous delivery or lack thereof.

According to the gestational age at birth, the infants were divided into the PTB group (age < 37 weeks) and full-term birth group (age ≥ 37 weeks). We also divided fetuses into four groups according to the gestational age at single intrauterine death (14-19 weeks, 20-24 weeks, 25-30 weeks, and 31-36weeks) and compared them.

Statistical analyses were performed from December 1, 2020, to December 15, 2020, using SPSS software, version 26.0 (SPSS). Chi-square and *t* test analysis were performed to test the significance of the findings. Logistic regression analysis was conducted to determine risk factors for preterm delivery. *P* value less than 0.05 was considered statistically significant.

Results

Obstetric Outcomes and Clinical Information

This study included 175 twins (mean [SD] gestational age at single intrauterine death, 27.0 [5.8] weeks; mean [SD] gestational age at birth, 33.8 [3.2] weeks) with single intrauterine death. Among these, 73 (41.7%) were monochorionic (MC) twins, and 102 (58.3%) were dichorionic (DC) twins. The mean gestational age at single intrauterine death was 27.0 weeks (range, 14-36 weeks). The mean gestational age at birth was 33.8 weeks (range, 26-40 weeks). A total of 164 out of 175 (93.7%) fetuses experienced spontaneous death, and 11 of 175 (6.3%) had spontaneous death after fetoscopic laser occlusion. A total of 139 of 175 (79.4%) infant births were categorized in the PTB group, and 36 of 175 (20.6%) were considered full term. Among those infants with PTB, 66 of 139 (47.5%) were MC twins, and 73 of 139 (52.5%) were DC twins. A total of 110 of 175 (62.9%) infants experienced spontaneous delivery. Among those delivered spontaneously, 50 of 110 (45.5%) infants were MC twins, and 60 of 110 (54.5%) were DC twins (Table 1).

The mean maternal age was 30.2 years (range, 20-44 years). Thirty-nine of 175 (22.3%) mothers experienced complications. Among these mothers, 15 (38.5%) had MC twins (8 [53.3%] mothers had gestational hypertension, 4 [26.7%] had gestational diabetes, 1 [6.7%] had hyperthyroidism, 1 [6.7%] had hypothyroidism, and 1 [6.7%] had anticardiolipin syndrome), and 24 (61.5%) had DC twins (19 [79.2%] mothers had gestational hypertension, and 5 [20.8%] mothers had gestational diabetes). A total of 41 of 175 (23.4%) mothers experienced fetal complications. Among these, 32 (78.0%) were MC twins (including 23 [71.9%] with twin-twin transfusion syndrome, 7 [21.9%] with selective intrauterine growth restriction, and 2 [6.3%] with structural deformities in one of the twins), and 9 of 41 (22.0%) were DC twins (including 1 [11.1%] with selective fetal growth restriction and 8 [88.9%] with structural deformities in one of the twins). A total of 116 of 175 (66.3%) patients conceived naturally (including 68 [58.6%] with MC twins and 48 [41.4%] with DC twins). We listed the obstetric outcomes and clinical information at single intrauterine death and compared the differences between the MC twins group and the DC twins group (Table 1). We found that there were significant differences in gestational age at birth (OR-1.5, 95 % CI [-2.42 to -0.52], P =0.003), prolongation of gestational age in the surviving twin (OR-2.9, 95 % CI [-5.02 to -0.77], P =0.008), assisted reproductive techniques (OR0.1, 95 % CI [0.02-0.17], P = 0.000), fetal coplications (OR 7.2, 95 % CI [3.23-15.98], P = 0.000), and instances of PTB (OR 3.7, 95 % CI [1.54-9.12], P = 0.002) between the MC twins group and DC twins group (Table 1).

Univariate Analysis of the PTB Factors in Single intrauterine death

We compared the differences between the PTB group and the full-term birth group. Some mothers underwent iatrogenic delivery due to obstetric factors. Therefore, we wanted to exclude human intervention and re-analyze the differences between the PTB and the full-term birth group. We found that there were significant differences in gestational age at birth (OR-5.6, 95 % CI -6.31 to -4.83], P = 0.000) , gestational age at single intrauterine death (OR 4.0, 95 % CI [0.53-7.46], P = 0.026), and chorionicity (OR 4.2, 95 % CI [1.29-13.48], P = 0.011) between the PTB group and the full-term birth group in all cases and spontaneous delivery cases . In addition, there was a significant difference in abnormal amniotic fluid (OR 8.8, 95 % CI [1.16-67.26], P = 0.013) between the PTB group and the full-term birth group in all cases (Table 2).

We found that chorionicity was associated with PTB; therefore, MC twins and DC twins were analyzed separately. We found there were significant differences in gestational age at birth (MC twins:OR -6.4, 95 % CI [-8.31 to -4.54], P = 0.000 ; DC twins:OR -4.6, 95 % CI [-5.30 to -3.88], P = 0.000) and gestational age at single intrauterine death (MC twins:OR 5.1, 95 % CI [1.54-8.61], P = 0.005; DC twins:OR 6.56, 95 % CI [3.61-9.50], P = 0.000) between the PTB group and the full-term birth group within the MC and DC twins groups. Furthermore, there were significant differences in history of abortion (OR 0.9, 95 % CI [0.80-0.96], P = 0.048) and dead fetal presentation (OR 13.5, 95 % CI [4.68-39.17], P = 0.000) in the DC twins group (Table 3).

Multifactor Analysis of the PTB Factors in Single intrauterine death

We conducted a multivariate analysis of the factors found to have significant differences in the univariate analysis. Our results showed that the gestational age at single intrauterine death was a risk factor for preterm birth in all cases (OR 2.89, 95 % CI [1.90-4.39], P = 0.000), spontaneous delivery cases (OR 2.26 , 95 % CI [1.32-3.86], P = 0.003), MC twins (OR 3.42, 95 % CI [1.37-8.55], P = 0.009), and DC twins (OR 2.68, 95 % CI [1.70-4.24], P = 0.000). Chorionicity was a risk factor for preterm birth in all cases (OR 0.30, 95 % CI [0.11-0.81], P = 0.017) and spontaneous delivery cases (OR 0.23, 95 % CI [0.07-0.76], P = 0.016). Abnormal amniotic fluid was a risk factor for preterm birth in all cases (OR 3.28, 95 % CI [1.01-10.63], P = 0.048) (Table 4).

The Gestational Age at Single intrauterine death and the Gestational Age at Birth

In order to further analyze the relationship between the different gestational age at single intrauterine death we divided the fetuses into four groups according to gestational age at single intrauterine death (14-19 weeks, 20-24 weeks, 25-30 weeks, and 31-36 weeks). We found that the 14- to 19-week single intrauterine death group had the oldest gestational age at birth for the surviving twin. Figure 1 shows the trend chart of gestational age at birth in the 4 groups. We found that the 14- to 19-week single intrauterine death group had the oldest gestational age at birth for the surviving twin in all cases (37.25 [1.29]), spontaneous delivery cases (37.14 [1.51]), MC twins (37.6 [2.07]) and DC twins (37.16 [1.07]) (Table 5).

We calculated the number of gestational weeks prolonged after single intrauterine death to reach delivery, to analyze the trend in the four groups (Table 5). We found that increases in the gestational age at single intrauterine death were associated with shorter prolongation of gestational age in the surviving twin. This trend was consistent in all cases, spontaneous delivery cases, MC twins, and DC twins (Figure 2).

Discussion

In our study, we found that the gestational age at single intrauterine death was a risk factor associated with PTB. Moreover, our results suggest that the prolongation of gestational age in the surviving twin was shortened as the gestational age at single intrauterine death increased.

Gestational age, whether for singletons or twins, is a key factor in determining the prognosis of surviving fetuses, since the risk of adverse consequences declines with increasing gestational age[11]. Therefore, we focused on the gestational age at single intrauterine death and at birth to evaluate the prognosis of MC twins after single intrauterine death. After analysis, we found that older gestational age at single intrauterine death was associated with PTB. When we further divided these cases into four groups according to their gestational age at single intrauterine death, we found that the 14- to 19-week single intrauterine death group had the oldest gestational age at birth in all the cases. This indicates that single intrauterine death at 14 to 19 weeks were associated with the best prognosis. In figure 2, we found that increases in the gestational age at single intrauterine death led to a shorter prolongation in gestation of the surviving twin. This trend was consistent with previous reports[12]. We assume that the effect on the uterus caused by a decrease in placental circulation is much greater in later gestational ages. Therefore, the shorter gestation of the surviving twin may be due to the effective circulating blood volume of the placenta decreasing sharply when single intrauterine death occurs, leading to instantaneous placental ischemia-induced uterine contractions. Because the area of the placenta in early pregnancy is much smaller than that in late pregnancy, the stimulation of uterine contractions caused by the decrease in placental circulation is accordingly smaller. However, further studies are needed to confirm this assumption.

Chorionicity was another risk factor for preterm birth in single intrauterine death. Previous articles also pointed out that both gestational age and long-term fetal prognosis were worse in the MC twins group than in the DC twins group[4,12]. In our study, it was found that the rate of preterm birth and gestational age was worse in MC twins group compared with that of the DC twins group. Our findings suggest that the chorionicity was the cause of premature delivery, which may be related to the special placental vasculature branch of the single chorionic membrane, but the specific pathophysiological changes require further study. In terms of fetal complications, there were significant differences between the MC twins group and DC twins group (OR 7.2, 95 % CI [3.23-15.98], P = 0.000). And there were also differences in the types of fetal complications. The fetal complications of MC twins were mostly twin-twin transfusion syndrome and selective intrauterine growth restriction, while those of DC twins were mostly fetal malformation. This is consistent with previous reports that twin-twin transfusion syndrome and selective intrauterine growth restriction are associated with single intrauterine death in MC twins[2,13].

For a single pregnancy, abnormal amniotic fluid is a factor associated with premature delivery[14,15]. In our study, it was found that abnormal amniotic fluid was a risk factor for preterm birth in all cases. However, there was no significant difference in the other groups. The reason for this may be that iatrogenic delivery is more frequent. Therefore, there was no significant difference in spontaneous delivery cases. This concept requires further study and analysis with larger sample size.

A previous systematic review is assessing the co-twin outcome after single intrauterine death reported that the incidence of PTB after single intrauterine death was 68% in MC twin pregnancies[6]. Another study reported the incidence of PTB after single intrauterine death to be as high as 66% in MC twin

pregnancies[12]. However, in our study, the incidence of PTB was much higher (79.4%) than these previous studies, whereas the incidence of spontaneous PTB was similar to the other studies. This discrepancy may be due to the higher rate of iatrogenic premature delivery at our hospital, which is a referral center responsible for difficult and critical cases in the three northeastern provinces. In addition, most of the cases of iatrogenic PTB were accompanied by maternal complications and fetal complications, which led to complex and rapid changes making iatrogenic preterm delivery inevitable.

This study is not without its limitations. Due to the retrospective design and lack of consistent documentation, potential residual confounders such as obesity, smoking, and environmental factors, could not be properly evaluated. Autopsy and placental evaluations may also have been limited, particularly if the prolongation of gestational age was long after single intrauterine death. On the other hand, our study offers a novel insight into the association between the gestational age at single intrauterine death and the subsequent prolongation of gestation in the surviving twin. This insight can help clinicians to better stratify the prognoses in women experiencing single intrauterine death in MC twin pregnancy to better support the surviving twin.

Conclusion

The fetus' gestational age at single intrauterine death was a risk factor for preterm birth in the surviving twin after single intrauterine death. The length of gestation was inversely proportional to increasing gestational age at Single intrauterine death.

Abbreviations

PTB, preterm birth; DC, dichorionic; MC, monochorionic.

Declarations

Ethics approval and consent to participate

This retrospective study was ethically approved by the Research Ethics Committee of Shengjing Hospital affiliated to China Medical University (no.2018PS381K, Shenyang, China).Written informed consent was obtained from individual or guardian participants. All methods were performed in accordance with the relevant guidelines and regulations (Declaration of Helsinki).

Consent for publication

Not applicable

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests

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Authors' contributions

Jingyi Liu collected and analyzed the data, and was a major contributor in writing the manuscript. Na Li, Na Shin, Sishi Liu and Caixia Liu participated in writing the manuscript and collecting data. Quan Na participated in the design of the article.

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Tables

Table1. Obstetric outcomes and clinical information of single intrauterine death

	All cases (n=175)	MC twins (n=73)	DC twins (n=102)	Statistics
Obstetric outcomes				Mean diff [95% CI], p value
Maternal age-years, mean (years)	30.2(4.8) ∗	29.8□4.9□∗	30.44□4.8□∗	-0.6□-2.07 to 0.86□ 0.416
Gestational age at birth (wks)	33.8 (3.2) ∗	32.9□3.0□∗	34.4□3.2□∗	-1.5 □ -2.42 to -0.52□ 0.003
Gestational age at single intrauterine death (wks)	27.0 (5.8) ∗	27.9□4.7□∗	26.5□6.5□∗	1.4 □-0.24 to 3.10□ 0.094
prolongation of gestational age in the surviving twin (wks)	6.71 (7.1) ∗	5.0 (5.7) ∗	7.9(7.8) ∗	-2.9 (-5.02 to -0.77) 0.008
				OR [95% CI], p value
Assisted reproductive technique	60□34.3%□	5□0.1%□	55□53.9%□	0.1 (0.02-0.17) 0.000
Maternal complications	39□22.3%□	15□20.5%□	24□23.5%□	0.8 (0.41-1.74) 0.640
Fetal complications	42□24.0%□	32□43.8%□	10□9.8%□	7.2 (3.23-15.98) 0.000
Instances of PTB	139□79.4%□	66□90.4%□	73□71.6%□	3.7 (1.54-9.12) 0.002
Spontaneous delivery cases	110 (62.8%)	50□45.5%□	60□54.5%□	1.5 (0.81-2.86□0.192

Data are given as N (%). ∗mean (SD).

Abbreviations: MC, monochorionic; DC, dichorionic; PTB, preterm birth.

Table 2. The differences between the PTB group and the full-term birth group

	All cases			Spontaneous delivery cases		
	PTB group (n=139)	Full-term birth group (n=36)		PTB group (n=90)	Full-term birth group (n=20)	
			Mean diff [95% CI], p value			Mean diff [95% CI], p value
Maternal age-years, mean (years)	30.1 (4.8) ∗	30.7 (5.1) ∗	-0.6 (-2.39 to 1.19) 0.507	30.2 (4.6) ∗	29.4 (4.0) ∗	0.8 (-1.38 to 3.02) 0.462
Gestational age at birth (wks)	32.7 (2.7) ∗	37.9 (0.9) ∗	-5.16 (-5.70 to -4.63) 0.000	32.3 (2.9) ∗	37.9 (0.9) ∗	-5.6 (-6.31 to -4.83) 0.000
Gestational age at single intrauterine death (wks)	28.3 (4.8) ∗	22.1 (6.8) ∗	6.3 (3.86-8.71) 0.000	27.3 (4.6) ∗	23.4 (7.2) ∗	4.0 (0.53-7.46) 0.026
			OR [95% CI], p value			OR [95% CI], p value
Assisted reproductive techniques	44 (31.7%)	16 (44.4%)	0.6 (0.27-1.22) 0.150	29 (32.2%)	8 (40%)	0.7 (0.26-1.93) 0.505
Maternal complications	31 (22.3%)	8 (22.2%)	1.0 (0.42-2.43) 0.992	22 (24.4%)	4 (20%)	0.7 (0.21-2.53) 0.627
Fetal complications	36 (25.9%)	6 (16.7%)	1.8 (0.68-4.54) 0.248	14 (15.6%)	4 (20%)	1.3 (0.39-4.28) 0.672
Chorionicity						
MC twins	66 (47.5%)	7 (19.4%)	3.7 (1.54-9.12) 0.002	46 (51.1%)	4 (20%)	4.2 (1.29-13.48) 0.011
DC twins	73 (52.5%)	29 (80.6%)		44 (48.9%)	16 (80%)	
Parity						
Multipara	33 (23.7%)	6 (16.7%)	1.6 (0.60-4.06) 0.363	23 (25.6%)	2 (10%)	3.1 (0.67-14.35) 0.133
Primipara	106 (76.3%)	30 (83.3%)		67 (74.4%)	18 (90%)	
History of abortion	11 (7.9%)	1 (2.8%)	3.0 (0.38-24.1) 0.277	10 (11.1%)	1 (5%)	2.4 (0.29-19.70) 0.41

Dead fetal presentation	38 (27.3%)	5 (13.9%)	2.3 (0.85-6.44) 0.095	35 (38.9%)	4 (20%)	2.5 (0.79-8.24) 0.110
PROM	29 (20.9%)	4 (11.1%)	2.1 (0.69-6.45) 0.182	28 (31.1%)	4 (20%)	1.8 (0.56-5.90) 0.322
Abnormal amniotic fluid	28 (20.1%)	1 (2.8%)	8.8(1.16, 67.26) 0.013	18 (20%)	1 (5%)	4.8 (0.60, 37.88) 0.108

Data are given as N (%). ∗mean (SD).

Abbreviations: MC, monochorionic; DC, dichorionic; PTB, preterm birth, PROM, premature rupture of membranes.

Table 3. The differences between the MC twins group and the DC twins group

	MC twins			DC twins		
	PTB group (n=139)	Full-term birth group (n=36)		PTB group (n=90)	Full-term birth group (n=20)	
			Mean diff [95% CI], p value			Mean diff [95% CI], p value
Maternal age-years, mean (years)	29.8 (5.1)	29.9 (2.8)	-0.02 (-3.97 to 3.93) 0.990	30.3 (4.5)	30.9 (5.5)	-0.6 (-2.67 to 1.49) 0.576
Gestational age at birth (wks)	32.3 (2.5)	38.7 (1.1)	-6.4 (-8.31 to -4.54) 0.000	33.1 (2.9)	37.7 (0.7)	-4.6 (-5.30 to -3.88) 0.000
Gestational age at single intrauterine death (wks)	28.4 (4.4)	23.3 (5.4)	5.1 (1.54-8.61) 0.005	28.3 (5.2)	21.8 (7.1)	6.56 (3.61-9.50) 0.000
			OR [95% CI], p value			OR [95% CI], p value
Assisted reproductive techniques	5 (7.6%)	0 (0%)	0.9 (0.86-0.99) 0.451	39 (53.4%)	16 (55.2%)	0.9 (0.39-2.21) 0.873
Maternal complications	14 (21.2%)	1 (14.3%)	1.6 (0.18-14.55) 0.666	17 (23.3%)	7 (24.1%)	1.0 (0.35-2.62) 0.927
Fetal complications	30 (45.5%)	2 (28.6%)	2.1 (0.38-11.52) 0.392	6 (8.2%)	4 (13.8%)	0.6 (0.15-2.15) 0.393
Parity						
Multipara	23 (34.8%)	2 (28.6%)	1.3 (0.24-7.44) 0.739	10 (13.7%)	4 (13.8%)	1.0 (0.29-3.46) 0.990
Primipara	43 (65.2%)	5 (71.4%)		63 (86.3%)	25 (86.2%)	
History of abortion	2 (3.0%)	1 (14.3%)	0.2 (0.15-2.38) 0.154	9 (12.3%)	0 (0%)	0.9 (0.80-0.96) 0.048
Dead fetal presentation	28 (31.1%)	0 (0%)	0.7 (0.58-0.80) 0.077	17 (23.3%)	5 (17.2%)	13.5 (4.68-39.17) 0.000
PROM	14 (21.2%)	0 (0%)	0.8 (0.70-0.89) 0.175	15 (20.5%)	4 (13.8%)	1.6 (0.49-

						5.36) 0.429
Abnormal amniotic fluid	16 (24.2%)	0 (0%)	0.8 (0.66-0.87) 0.140	12 (16.4%)	1 (3.4%)	5.5 (0.69-44.47) 0.076

Data are given as N (%). ∗mean (SD).

Abbreviations: MC, monochorionic; DC, dichorionic; PTB, preterm birth, PROM, premature rupture of membranes.

Table 4. Multifactor analysis of the PTB factors in single intrauterine death

		B	P	OR	95% CI
All cases	Chorionicity	-1.19	0.017	0.30	0.11-0.81
	Gestational age at single intrauterine death	1.06	0.000	2.89	1.90-4.39
	Abnormal amniotic fluid	1.19	0.048	3.28	1.01-10.63
Spontaneous delivery cases	Chorionicity	-1.49	0.016	0.23	0.07-0.76
	Gestational age at single intrauterine death	0.82	0.003	2.26	1.32-3.86
MC twins	Gestational age at single intrauterine death	1.23	0.009	3.42	1.37-8.55
DC twins	Gestational age at single intrauterine death	0.99	0.000	2.68	1.70-4.24

Abbreviations: MC, monochorionic; DC, dichorionic.

Table 5. The gestational age at birth and the prolongation of gestational age in the surviving twin between the different group in the gestational age at single intrauterine death

	Gestational age at birth (wks)				Prolongation of gestational age in the surviving twin (wks)			
	All cases	Spontaneous delivery cases	MC twins	DC twins	All cases	Spontaneous delivery cases	MC twins	DC twins
14-19 weeks	37.25 (1.29)	37.14 (1.51)	37.6 (2.07)	37.16 (1.07)	20.5 (2.23)	20.14 (1.79)	20.0 (2.24)	20.63 (2.27)
20-24 weeks	32.93 (3.43)	31.79 (3.39)	31.5 (2.68)	33.72 (3.61)	11.0 (4.41)	9.74 (4.57)	9.7 (3.40)	11.72 (4.81)
25-30 weeks	32.40 (3.53)	32.06 (3.38)	32.44 (3.27)	32.34 (3.88)	4.77 (3.91)	4.31 (3.52)	4.30 (3.50)	5.34 (4.36)
31-36 weeks	33.76 (3.21)	34.84 (1.91)	33.23 (1.77)	34.86 (1.62)	1.12 (1.42)	1.72 (1.72)	0.68 (1.13)	1.39 (1.52)

Data are given as mean (SD).

Abbreviations: MC, monochorionic; DC, dichorionic.

Figures

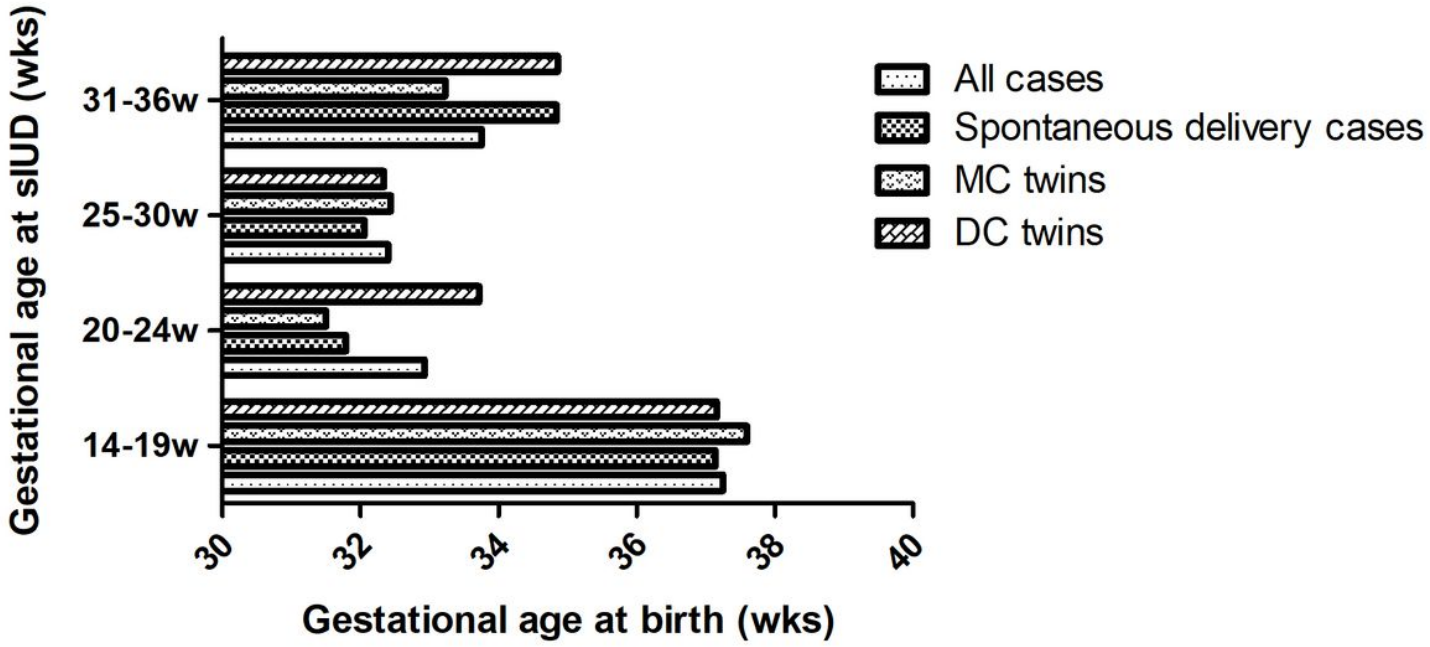

Figure 1

Trend chart of gestational age

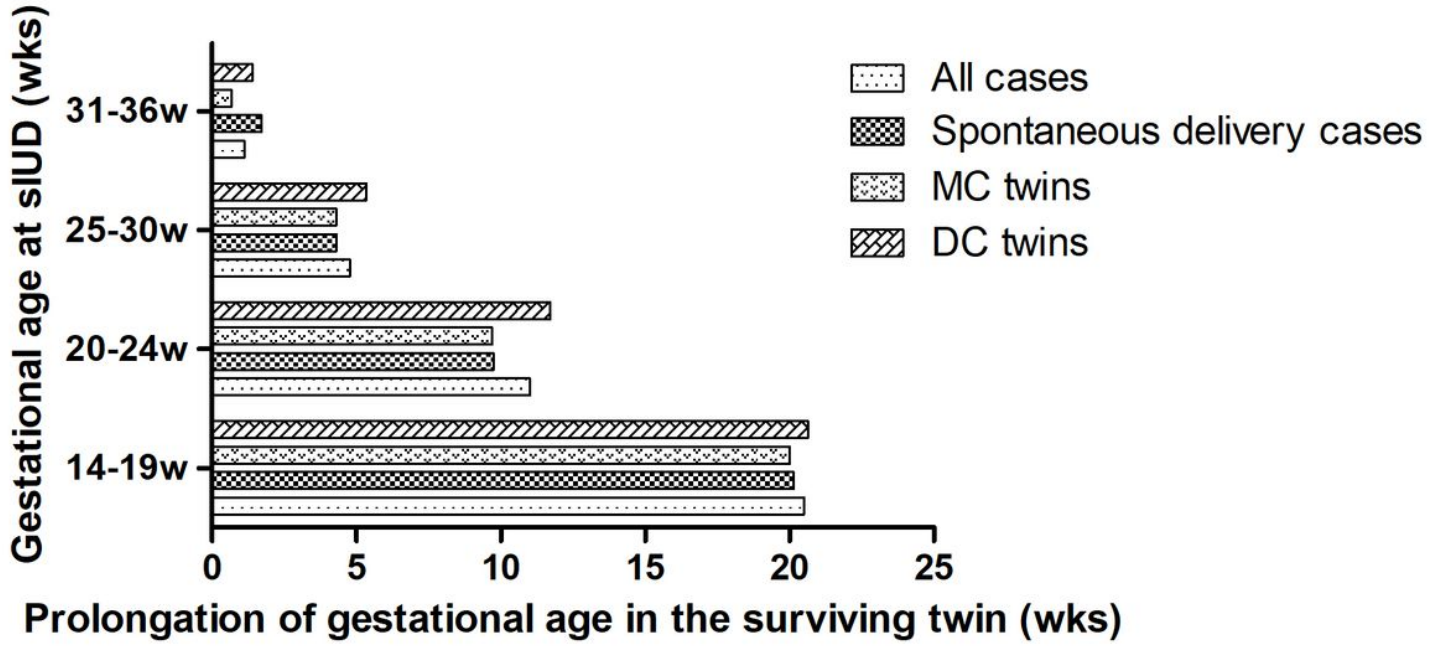

Figure 2

Prolongation of gestational age