

中文摘要

目的:

探讨缺铁性贫血对双胎妊娠母儿结局的影响,为孕期母胎监测及临床医师指导该人群妊娠提供临床依据,以降低不良妊娠结局的发生。

方法:

回顾性分析 2020 年 1 月至 2022 年 6 月于吉林大学第一医院收治的双胎妊娠合并缺铁性贫血产妇 128 例(实验组),双胎妊娠不合并缺铁性贫血产妇 216 例(对照组 1)、单胎妊娠合并缺铁性贫血产妇 314 例(对照组 2)及双胎新生儿的临床资料,采集孕产妇的一般资料:年龄、孕产次、孕周、受孕方式;妊娠并发症:早产、妊娠期高血压疾病、子宫收缩乏力、胎膜早破、妊娠期糖尿病、妊娠期甲状腺功能减退症;妊娠结局:产后出血量、分娩孕周、剖宫产率;孕产妇的补铁情况及不同剂量对并发症的影响;双胎的新生儿出生体重、双胎的新生儿结局:新生儿血气血红蛋白、Apgar 评分等临床资料,比较相关指标的差异。双胎胎儿部分根据早期彩超及病例记载双胎妊娠的绒毛膜性,共得到有绒毛膜性的双胎产妇共 287 例,单绒单羊者 5 例,单绒双羊者 66 例,双绒双羊者 216 例。双胎分娩后死胎 43 例,共得活产儿 658 例胎儿体重。血气分析、Apgar 结果,排除不完整的结果,共得到 444 名胎儿血气血红蛋白结果以及 629 名胎儿 Apgar 评分结果。胎儿部分比较母体贫血对双胎组绒毛膜性、双胎胎儿体重、双胎新生儿血气血红蛋白、双胎 Apgar 评分的影响差异。

结果:

1、三组孕产妇孕次、产次之间,无统计学差异($P>0.05$)。与单胎贫血组比较,双胎贫血组的辅助生殖差异有统计学意义($P<0.0167$),年龄、孕次、产次,差异无统计学意义($P>0.0167$)。与单胎贫血组比较,双胎非贫血组间辅助生殖及年龄有统计学差异($P<0.0167$),孕次、产次无统计学差异($P>0.0167$)。双胎贫血组与双胎非贫血组比较,年龄、孕次、产次、辅助生殖,差异无统计学意义($P>0.0167$)。

2、三组间孕产妇并发症中:早产、妊娠期高血压疾病、子宫收缩乏力、胎

膜早破、妊娠期糖尿病发生率差异有统计学意义 ($P < 0.05$)。与单胎贫血组比较, 双胎贫血组发生早产、妊娠期高血压疾病、子宫收缩乏力及妊娠期糖尿病, 差异有统计学意义 ($P < 0.0167$)。与单胎贫血组比较, 双胎非贫血组早产、妊娠期高血压疾病、子宫收缩乏力、胎膜早破、妊娠期糖尿病发生率比较, 差异均有统计学差异 ($P < 0.0167$)。双胎贫血组与双胎非贫血组, 妊娠期高血压疾病比较, 差异有统计学差异 ($P < 0.0167$)。

3、将双胎贫血组与单胎贫血组比较, 剖宫产率、分娩孕周以及分娩时出血量, 差异有统计学意义 ($P < 0.0167$)。双胎非贫血组与单胎贫血组比较, 剖宫产率、分娩孕周、分娩时出血量, 差异有统计学意义 ($P < 0.0167$)。双胎贫血组与双胎非贫血组比较, 剖宫产率、分娩孕周、分娩时出血量, 差异无统计学意义 ($P > 0.0167$)。

4、相比较双胎非贫血组, 双胎贫血组与单胎贫血组铁剂及其他非铁剂补血药物服用率显著升高, 差异有统计学意义 ($P < 0.0167$)。与单胎贫血组相比, 双胎贫血组其他非铁剂补血药物服用率升高, 约是单胎贫血组的两倍之多, 差异有统计学意义 ($P < 0.0167$), 两组铁剂服用率情况, 差异无统计学意义 ($P > 0.0167$)。

5、双胎妊娠 MCMA 组孕妇 5 例, 贫血组 1 例, 非贫血组 4 例。MCDA 组孕妇 66 例, 贫血者 28 例, 非贫血者 38 例。DCDA 组孕妇 216 例, 贫血者 84 例, 非贫血者 132 例。三组孕妇在在是否贫血上不具有统计学差异 ($P > 0.05$)。

6. 双胎妊娠活产儿 658 例中, 非贫血组胎儿共 416 名, 平均体重为 2.43 (2.02-2.76) 千克, 贫血组胎儿共 242 名, 平均体重 2.37 (1.92-2.74) 千克。两组年龄不满足正态分布。二组新生儿体重之间没有统计学差异 ($P > 0.05$)。但我们发现 MCDA 组胎儿平均体重 2.26 (1.87-2.65) 千克, DCDA 组新生儿平均体重 2.44 (2.03-2.79) 千克, 两组有统计学差异 ($P < 0.05$)。

7、双胎妊娠共得到 444 名胎儿血气血红蛋白结果。结果显示母体贫血组胎儿贫血 42 例, 占 23.1%; 母体非贫血组胎儿贫血 37 例, 占 14.0%。母体贫血与胎儿贫血有统计学差异 ($P < 0.05$)。

8、贫血组 Apgar 评分低于 7 分者 24 例, 占 10.5%, 非贫血组 Apgar 评分低于 7 分者 31 例, 占 7.8%, 两组之间没有统计学差异 ($P > 0.05$)。其中每一项

心率、肌张力、皮肤颜色、反射活动贫血组与非贫血组均无差异。但小儿呼吸项贫血组 152 例，占 66.7%；非贫血组 230 例，占 57.5%，两组具有统计学差异（ $P < 0.05$ ）。

结论：

1、双胎因素显著影响早产、妊娠期高血压疾病、胎膜早破、子宫收缩乏力及妊娠期糖尿病的发生。

2、轻度及中度缺铁性贫血不是影响双胎妊娠分娩孕周、分娩方式、产后出血的主要因素，但会提高妊娠期高血压疾病的发生。

3、母体贫血会影响新生儿出生后血红蛋白水平，会影响新生儿出生后呼吸水平，要第一时间处理，以免造成不良妊娠结局。

4、双胎的绒毛膜性与孕妇的贫血无相关性，但会影响新生儿体重，MCDA 组的新生儿体重相对低于 DCDA 组。

5、双胎妊娠补铁剂量在 100-200mg/天时，可显著降低早产、HDP、子宫收缩乏力的发生，补铁剂量大于 200mg/天时未降低妊娠期并发症的发生，且会提高 GDM 发生的风险。

关键词：

双胎妊娠、缺铁性贫血、妊娠期并发症、妊娠结局

Abstract

Perinatal analysis of twin pregnancies with combined iron deficiency anaemia

Objective:

To investigate the effect of iron deficiency anaemia on maternal and fetal outcomes in twin pregnancies and to provide a clinical basis for maternal and fetal monitoring during pregnancy and for clinicians to guide pregnancies in this population in order to reduce the incidence of adverse pregnancy outcomes.

Methods.:

We retrospectively analyzed the clinical data of 128 women with twin pregnancies combined with iron deficiency anemia (experimental group), 216 women with twin pregnancies without iron deficiency anemia (control group 1), and 314 women with singleton pregnancies combined with iron deficiency anemia (control group 2) and twin newborns admitted to the First Hospital of Jilin University from January 2020 to June 2022 , and collected general maternal data: age, number of pregnancies and deliveries The data were collected on general maternal data: age, number of pregnancies, gestational weeks, cesarean delivery rate; pregnancy complications: preterm birth, hypertensive disorders in pregnancy, uterine contractions, premature rupture of membranes, gestational diabetes mellitus, hypothyroidism in pregnancy; pregnancy outcomes: postpartum haemorrhage, gestational weeks of labour, caesarean section or not.; maternal iron supplementation and the effect of different doses on complications .Newborn birth weight of twins, neonatal outcome of twins: clinical data of neonatal blood gas hemoglobin and Apgar score, comparing the differences of related indicators. The twin fetuses were partly based on early ultrasound and case documentation of chorionicity in twin pregnancies, and a total of 287 patients with chorionicity were obtained, 5 with single chorion and single sheep, 66 with single chorion and double sheep and 216 with double chorion

and double sheep. There were 43 cases of stillbirths after twin deliveries, and a total of 658 cases of live births with fetal weight. Blood gas analysis and Apgar results, excluding incomplete results, yielded 444 fetal blood gas hemoglobin results as well as 629 fetal Apgar score results. The fetal part compared the difference of maternal anemia on chorionicity, fetal weight of twin fetuses, neonatal blood gas hemoglobin of twin fetuses, and Apgar score of twin fetuses in the twin group.

Results:

1. Between the three groups of maternal gestation and delivery, there was no statistically significant difference ($P > 0.05$). There was a statistically significant difference in assisted reproduction ($P < 0.0167$) and no statistically significant difference ($P > 0.0167$) in age, gestation, and delivery between the twin anemic groups compared to the singleton anemic group. There was a statistically significant difference in assisted reproduction and age between the twin non-anemic group compared with the singleton anemic group ($P < 0.0167$), and no statistically significant difference in the number of pregnancies and deliveries ($P > 0.0167$). There were no statistically significant differences in age, gestation, delivery, and assisted reproduction between the twin-anemic group and the twin-nonanemic group ($P > 0.0167$).

2. Among the maternal complications between the three groups: preterm birth, hypertensive disorders of pregnancy, lack of uterine contractions, premature rupture of membranes and gestational diabetes mellitus, the differences were statistically significant ($P < 0.05$). There was a statistically significant difference in the occurrence of preterm labour, hypertensive disorders of pregnancy and uterine contraction weakness in the twin foetus anaemia group compared to the single foetus anaemia group ($P < 0.0167$). There was a statistically significant difference in the incidence of preterm labour, hypertensive disorders of pregnancy, uterine contraction weakness, premature rupture of membranes and gestational diabetes mellitus in the twin non-anaemic group compared to the singleton anaemic group ($P < 0.0167$). There was a statistically significant difference between the twin anaemic group and the twin

non-anaemic group, and the difference in hypertensive disorders of pregnancy ($P < 0.0167$).

3. There was a statistically significant difference in the rate of caesarean section, gestational week of labour and bleeding at delivery in the twin anaemic group compared with the singleton anaemic group ($P < 0.0167$). In the twin non-anaemic group compared with the singleton anaemic group, there was a statistically significant difference in the rate of caesarean section, gestational week of labour and haemorrhage at delivery ($P < 0.0167$). In the twin-anemic group, there was no statistically significant difference in the rate of cesarean delivery, week of labour and amount of bleeding at delivery compared with the twin-nonanemic group ($P > 0.0167$).

4. The rate of iron and other non-iron supplementation was statistically significantly higher in the twin-anemic group compared to the singleton-anemic group ($P < 0.0167$). The rate of taking other non-iron blood supplements was higher in the twin pregnancy anaemia group compared with the singleton anaemia group, which was about twice as high as that in the singleton anaemia group, and the difference was statistically significant ($P < 0.0167$), while the difference in the rate of taking iron in the two groups was not statistically significant ($P > 0.0167$).

5. 5 cases of twin pregnancies in the MCMA group, 1 case in the anaemic group and 4 cases in the non-anaemic group. 66 cases in the MCDA group, 28 cases in the anaemic group and 38 cases in the non-anaemic group. 216 cases in the DCDA group, 84 cases in the anaemic group and 132 cases in the non-anaemic group. There was no statistical difference between the three groups in terms of whether they were anaemic or not ($P > 0.05$).

6. Of the 658 live births, there were 416 fetuses with a mean weight of 2.43 (2.02-2.76) kg in the non-anaemic group and 242 fetuses with a mean weight of 2.37 (1.92-2.74) kg in the anaemic group. The ages of both groups did not conform to a normal distribution. There was no statistical difference in neonatal weight between the two groups ($P > 0.05$). However, we found a mean fetal weight of 2.26 (1.87-2.65) kg in the MCDA group and 2.44 (2.03-2.79) kg in the DCDA group, which was

statistically different between the two groups ($P < 0.05$).

7. A total of 444 fetal blood gas haemoglobin results were obtained. The results showed that there were 42 cases (23.1%) of fetal anaemia in the maternal anaemia group and 37 cases (14.0%) of fetal anaemia in the maternal non-anaemic group. There was a statistical difference between maternal anaemia and fetal anaemia ($P < 0.05$).

8. There were 24 cases (10.5%) with Apgar score below 7 in the anaemic group and 31 cases (7.8%) with Apgar score below 7 in the non-anaemic group, with no statistical difference between the two groups ($P > 0.05$). There was no difference in heart rate, muscle tone, skin colour and reflex activity between the anaemic and non-anaemic groups for each of these items. However, there were 152 cases (66.7%) in the paediatric respiratory item anaemia group and 230 cases (57.5%) in the non-anaemic group, with statistical differences between the two groups ($P < 0.05$).

Conclusion:

1. The twin birth factor significantly influenced the occurrence of preterm birth, hypertensive disorders of pregnancy, premature rupture of membranes, lack of uterine contractions and gestational diabetes mellitus.

2. Iron deficiency anaemia is not a major factor affecting the gestational week of delivery, mode of delivery and postpartum haemorrhage in twin pregnancies, but it affects the occurrence of hypertensive disorders of pregnancy.

3. Maternal anaemia can affect the haemoglobin level of the newborn after birth and can affect the respiratory level of the newborn after birth, and should be dealt with in the first instance to avoid adverse pregnancy outcomes.

4. Chorionicity in twin pregnancies does not correlate with maternal anaemia, but can affect neonatal weight, which is relatively lower in the MCDA group than in the DCDA group.

5. Iron supplementation at a dose of 100-200mg/day in twin pregnancies significantly reduced the incidence of preterm labor, HDP, and uterine contraction weakness, while iron supplementation at a dose greater than 200mg/day did not

reduce the incidence of pregnancy complications and increased the risk of GDM.

Keywords:

twin pregnancy, iron deficiency anaemia, complications during pregnancy,
pregnancy outcome

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中英文缩略词对照表

英文缩写	英文全称	中文名称
ID	Iron deficiency	铁缺乏
IDA	Iron deficiency anemia	缺铁性贫血
ART	Assisted reproductive technology	辅助生殖技术
DCDA	Dichorionicdiamnionic	双绒毛膜双羊膜囊双胎
MCDA	Monochorionicdiamnionic	单绒毛膜双羊膜囊双胎
MCMA	Monochorionicmonoamnionic	单绒毛膜单羊膜囊双胎
PPH	Postpartum hemorrhage	产后出血
B-Lynch	B-Lynch	子宫外科缝扎术
TTTS	Twin-twin transfusion syndrome	双胎输血综合征
AA	Arteriovenous anastomosis	动静脉吻合
VV	Venous anastomosis	静脉吻合
AA	Arterial anastomosis	动脉吻合
sIUGR	Selective fetal growth restriction	选择性胎儿生长受限
TAPS	Anemia polyhemotic syndrome	贫血多血质综合征
TOPS	Oligohydramnios syndrome	羊水过多-羊水过少综合征
HDP	Hypertension during pregnancy	妊娠期高血压疾病
GDM	Gestational diabetes	妊娠期糖尿病
Apgar	Apgar	阿氏评分、新生儿评分
BMI	Body Mass Index	体重指数
HCG	Human chorionic gonadotrophin	人绒毛膜促性腺激素
HGB	Hemoglobin	血红蛋白

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