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FEATURES OF THE COURSE OF PREGNANCY IN DICHORIONIC DIAMNIOTIC TWINS COMPARED WITH SINGLETON PREGNANCY

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Abstract:

Twin pregnancy is associated with an increased risk of maternal and perinatal complications compared with singleton pregnancy. Dichorionic diamniotic (DCDA) twins represent the most common type of twin gestation and generally have a more favorable prognosis than monochorionic twins. Nevertheless, DCDA pregnancies remain at higher risk for adverse outcomes, including preterm birth, hypertensive disorders, fetal growth abnormalities, and placental dysfunction. This review aims to compare the clinical course of DCDA twin pregnancies with singleton pregnancies and to identify the main maternal and fetal complications associated with multiple gestation.

Keywords: dichorionic diamniotic twins, singleton pregnancy, placental function, fetal growth, obstetric complications.



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The incidence of twin pregnancies has increased worldwide over recent decades due to delayed childbearing and the widespread use of assisted reproductive technologies. Among twin pregnancies, dichorionic diamniotic gestations account for the majority of cases. In these pregnancies, each fetus has its own placenta and amniotic sac, reducing the risk of complications related to placental vascular anastomoses. Despite this advantage, DCDA twin pregnancies are still considered high-risk pregnancies requiring close antenatal surveillance.

A literature review was conducted using publications from international databases including PubMed, Scopus, and Web of Science. Studies published during the last decade that evaluated maternal, fetal, and placental outcomes in DCDA twin pregnancies and singleton pregnancies were analyzed.

Women carrying DCDA twins demonstrate a higher prevalence of pregnancy-related complications compared with women carrying singletons. Increased maternal cardiovascular demand and greater placental mass contribute to elevated risks of gestational hypertension and preeclampsia. Furthermore, gestational diabetes mellitus is reported more frequently among twin pregnancies.

Fetal Growth and Development

Although each fetus possesses an independent placenta, competition for maternal resources may affect fetal growth. Growth discordance between twins occurs more commonly than growth restriction in singleton pregnancies. Serial ultrasonographic assessment is therefore essential to monitor fetal growth patterns and detect early signs of placental insufficiency.

Placental Features

The placenta plays a crucial role in ensuring adequate fetal development. Histopathological studies have demonstrated that DCDA placentas often exhibit



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compensatory adaptive mechanisms, including increased vascularization and changes in villous architecture. However, placental dysfunction may still develop and contribute to fetal growth abnormalities and preterm delivery.

Preterm Birth

Preterm birth remains one of the most significant complications of DCDA twin pregnancies. Uterine overdistension, increased placental mass, and inflammatory pathways contribute to earlier onset of labor. The average gestational age at delivery in DCDA twins is significantly lower than in singleton pregnancies.

Perinatal Outcomes

Neonates born from DCDA twin pregnancies have a higher likelihood of low birth weight, admission to neonatal intensive care units, and respiratory complications. However, outcomes are generally more favorable than those observed in monochorionic twin pregnancies due to the presence of separate placentas. Dichorionic diamniotic twin pregnancy is characterized by unique physiological adaptations that distinguish it from singleton gestation. The presence of two fetuses results in increased maternal metabolic demands, greater expansion of plasma volume, and enhanced cardiovascular workload. These changes are necessary to maintain adequate uteroplacental circulation and support fetal growth. However, excessive physiological stress may contribute to the development of pregnancy-related complications.

Several studies have demonstrated that maternal weight gain is generally higher in twin pregnancies than in singleton pregnancies. Adequate maternal nutrition plays a critical role in optimizing fetal growth and reducing the risk of low birth weight. Nevertheless, despite increased nutritional support, twin pregnancies remain vulnerable to fetal growth restriction and birth weight discordance.



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The risk of anemia is also considerably higher in women carrying twins due to increased iron and folate requirements. Maternal anemia has been associated with adverse neonatal outcomes, including preterm birth and low birth weight. Therefore, routine hematological monitoring and nutritional supplementation are essential components of prenatal care.

Ultrasound surveillance represents a cornerstone in the management of DCDA twin pregnancies. Regular assessment of fetal biometry, amniotic fluid volume, placental morphology, and Doppler blood flow indices allows early identification of fetal compromise. Compared with singleton pregnancies, DCDA twins require more frequent antenatal visits and ultrasound examinations.

Placental examination has revealed significant structural adaptations in twin pregnancies. Increased placental angiogenesis, vascular remodeling, and alterations in villous maturation are frequently observed. These compensatory mechanisms help maintain adequate oxygen and nutrient transport to both fetuses. However, when placental adaptation becomes insufficient, adverse outcomes such as fetal growth restriction and preeclampsia may occur.

Recent evidence suggests that inflammatory and oxidative stress pathways are more active in multiple gestations than in singleton pregnancies. Elevated levels of pro-inflammatory cytokines and markers of oxidative stress may contribute to endothelial dysfunction and premature activation of labor pathways, thereby increasing the risk of spontaneous preterm birth.

In addition, neonatal outcomes are strongly influenced by gestational age at delivery. While most singleton pregnancies reach full term, a substantial proportion of DCDA twin pregnancies deliver before 37 weeks of gestation. Consequently, neonatal respiratory distress syndrome, feeding difficulties, and admission to neonatal intensive care units occur more frequently among twins.



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Understanding these clinical and pathophysiological differences is essential for developing effective monitoring strategies and improving maternal and neonatal outcomes in dichorionic diamniotic twin pregnancies.

Conclusion

Dichorionic diamniotic twin pregnancies differ substantially from singleton pregnancies in terms of maternal adaptation, placental development, fetal growth, and perinatal outcomes. Although DCDA twins have a relatively favorable prognosis among multiple gestations, they remain associated with increased risks of hypertensive disorders, gestational diabetes, fetal growth abnormalities, and preterm birth. Careful antenatal monitoring and timely intervention are essential for optimizing maternal and neonatal outcomes.

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