MORPHOFUNCTIONAL FEATURES OF PLACENTAS IN DICHORIONIC DIAMNIOTIC TWINS

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Abstract:
Twin pregnancies have an increased incidence in recent years, especially due to the development of assisted human reproduction techniques. Although most of the in vitro fertilization pregnancies are dichorionic tasks, exceptions may also occur following the placental fusion process. Twin pregnancies in which the fusion process occurs associate the complications of monochorial pregnancies such as prematurity, growth discordance between the twins, twin-to-twin transfusion syndrome, twin reversed arterial perfusion, with higher perinatal mortality and morbidity.

Keywords: placental fusion, dichorionic-diamniotic twin pregnancy, twin-to-twin transfusion syndrome.

The association between discordant fetal growth and the complications of twin pregnancy is widely recognized both in monochorionic diamniotic (MCDA) twins and dichorionic diamniotic (DCDA) twins (Cunningham et al., 2001; Minakami et al., 1999; Redman et al., 2002). In the former (MCDA twins), weight discordancy is frequently attributed to twin–twin transfusion syndrome, in which various vascular anastomoses are present, inducing an imbalance in fetal/placental perfusion, leading to a lighter donor/heavier recipient, and finally to weight discordancy (Benirschke & Kaufmann, 2000; Cunningham et al., 2001). Placental vascular anastomosis, therefore, is considered to induce twin-to-twin transfusion syndrome, a syndrome of twin discordancy unique to MCDA twins. Twin discordancy occurs not only in MCDA twins but also DCDA twins (Cunningham et al., 2001; Matsubara et al., 2000; Minakami et al., 1999). Many physiological/ pathological conditions induce discordant DCDA twins: Some chromosomal anomalies, congenital infections, a constitutionally smaller twin, and various malformations; When these common disorders occur in only one twin, they may lead to growth restriction of the corresponding twin, and finally to weight discordancy (Benirschke & Kaufmann, 2000; Cunningham et al., 2001).The development of assisted human reproduction techniques has led to an increase in the incidence of twin pregnancies. Twin pregnancies can be monozygotic, derived from a single egg which can be monochorionic-monoamniotic or monochorionic-diamniotic, genetically identical and same-sex twins, or dizygotic, each embryo from another egg, dichorial-diamniotic, different twins. Monochorionic pregnancies are associated with more complications than dichorionic. Complications of twin pregnancies are either associated with the mother such as gestational diabetes, spontaneous abortion, pregnancy-induced hypertension and preeclampsia, or

associated with the fetuses: prematurity (average gestational age is about 35-36 weeks for twins), intrauterine growth restriction on both embrions or only one of them, congenital malformations, chromosomal abnormalities, twin-to-twin transfusion syndrome and others. The prematurity associated with twin pregnancies has been an intensely debated issue in the literature because it associates an increased rate of perinatal mortality and requires specialized therapt in neonatal intensive care unit. In recent years, the extension of pregnancy as close as possible to term is being attempted. Twin-to-twin transfusion syndrome (TTTS) is a rare complication of monochorionic twin pregnancies (between 10 and 20%), but with increased mortality and morbidity. The pathophysiological mechanism involves the development of a discrepancy in placental blood flow between the two fetuses, due to the presence of placental vascular anastomoses, one being the donor and the other the recipient. The number and type of anastomoses (arterial-to-arterial, venous-to-venous, or arterial-to-venous) determine the severity of the case.

We present the case of a caucasian woman, with no previous births, 36-year-old without significant personal pathological history, normal BMI, non-smoking, higher studies, no exposure to toxic environment, normal blood pressure, with twin pregnancy obtained through in vitro fertilization. During pregnancy the patient received treatment with Clexane and folic acid. The double test showed no chromosomal abnormalities. Also TORCH test was negative, the usual blood test analyses within normal limits and the cultures of urine and cervix did not isolate pathogenic germs. The fetal morphology ultrasound from the first trimester was within normal limits for the gestational age with harmonic development of both fetuses. The patient was monitored weekly with measurements of Doppler flow at the level of the umbilical artery and venous duct, also of the amount of amniotic fluid and the biometric parameters. The pregnancy was considered dichorionic-diamniotic without associating signs of twin-to-twin transfusion syndrome (no single placental aspect, same sex on both sides - in this case being boy and girl, without polyhydramnios in one twin or oligohydramnios in the other, without discrepancies between the appearance of the umbilical cords). At 24 weeks of gestation, complete corticosteroid therapy was administrated due to high-risk delivery that was expected of a premature birth.

Finally, following the clinical and paraclinical evidences of the presented case, we can say that the dichorionic-diamniotic twin pregnancy with macroscopic aspect of placental fusion and minimal placental anastomoses (which are specific to twin-to-twin transfused syndrome and twin reversed arterial perfusion) did not determine the occurrence of obstetric or neonatal complications except to a small extent. Newborns have only associated the complications of prematurity in mild forms

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