

Macrosomia in Discordant Twin: An Out of the Box Presentation of Abnormal Growth in Dizygotic Twin

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Abstract

Background: Weight discordance of ≥ 20 percent is present in 15 percent of twin pairs and mostly the smaller twin's birth weight $<10^{\text{th}}$ percentile and the larger twin is nearer appropriate size for gestational age. We report twin pairs where the larger twin is macrosomic with smaller twin having normal birth weight. We could not find a similar report in the literature.

Case presentation: The twins were born to 29 years old gravida 3 para 2 lady at 38 weeks and 3 days of gestation. The first of twins was male and macrosomic (4500 gm) and his twin sister was of normal birth weight (3500 gm), with 22 percent birth weight discordance.

Conclusion: We report this case as there is no similar report in the literature on abnormal growth of twins with macrosomia and discordance: an out of the box presentation. Both of our cases are large for gestational age an adjustable fetal weight standard for twins.

Keywords: Fetal macrosomia; Twin macrosomia; Twin complications; Twin birth weight; Jimma University

Introduction

With the exception of macrosomia (birth weight >4000 g) and post-term pregnancy almost all potential complications of pregnancy are increased in twin pregnancy [1]. One of these complications, growth abnormality, is common and manifest as: either one or both twins being small for gestational age or one twin can be significantly smaller than the other twin (i.e., growth discordance) [1,2]. Discordance in birth weight of >20 percent is the most commonly used threshold considered to be predictive of adverse outcome and present in 15 percent of twins [1]. When there is discordance, the smaller twin has a birth weight $<10^{\text{th}}$ percentile in two-thirds of the cases, and the remaining are nearer appropriate size for gestational age. The larger twin, on the other hand, may be either small or appropriate size for gestational age [1,2]. We did not find in the literature of discordance due to one baby being macrosomic and smaller baby with normal birth weight. Therefore, we report an exceptional case of macrosomic-normal birth weight twin pairs on singleton weight standard weighed 4500 and 3500 grams at birth.

Case Presentation

A 29-year old gravida 3 para 2 (both alive) mother presented to our hospital in labor at the gestational age of 38 weeks and 3 days calculated from last normal menstrual period. She was referred from a rural health center with a diagnosis of prolonged labor and malpresentation. She had antenatal care follow up at the same health center without ultrasound examination and the pregnancy was uneventful, has gained weight comparable to previous pregnancies and current pregnancy is heavier. She has no known medical illnesses. Both of previous deliveries were at home. She is married to her current husband twelve years back and he is the only sexual partner.

On examination, she is in labour pain with blood pressure 120/80 mmHg, pulse rate of 102 beats per minute, the temperature of 36.8-degree centigrade and normal breathing. On abdominal examination, there were multiple fetal poles with the breach in the lower uterine pole. On pelvic examination, the cervix was 6

centimetres dilated and with male fetus in right sacrum anterior position presenting above ischial spines. Ultrasound examination confirmed twin pregnancy with twin-A in breach presentation, with no visible congenital anomaly in both fetuses. There were two separate placentas, implanted at the fundus and left posterolateral part of the uterus. Her hematocrit was 37% and blood group was O+. Delivery by cesarean section was decided immediately (as the hospital protocols recommendation). Dizygotic twins with 22% birth weight discordance (see formula below), 4500 grams weighing male newborn and his twin sister weighing 3500 grams were delivered in this order and had good APGAR scores (see Figure 1) were delivered. There were two separate placentas with no visible gross abnormalities, and of comparable size.

$$\text{Discordance} = \frac{\text{Birth Weight of (bigger baby (4500) - Smaller baby (3500 gm))}}{\text{Birth Weight of bigger baby (4500)}} = 22.2\%$$

The newborns were evaluated at the neonatal side and baby-1 was treated for hypoglycaemia and both newborns started on breastfeeding as soon as the mother was awake from anesthesia. Otherwise, neither had any gross congenital anomalies detected, were active during the hospital stay. The mothers blood sugar determined postpartum was 86 mg/dl and she was discharged with the newborns on the fourth postoperative day in good condition with postnatal care to be continued at the nearby health center (Figure 1).

Discussions

Macrosomia, is most commonly defined as, birth weight of 4,000 g and above (3). On the other hand infant weighing $>90^{\text{th}}$ percentile for

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Figure 1: 4500 grams weighing male new born (right) with his twin sister weighing 3500 grams (left) soon after birth.

gestational age is considered large for gestational age on singleton birth weight curves [3,4]. In the first and second trimesters, the growth rate of twins is not significantly different from that of singletons. However, it diverges from singleton growth in the third trimester with slower fetal growth in uncomplicated twin pregnancies, due to placental crowding and competition for nutrients [1,5]. As a result the average birth weight for twins is 2333 g, compared to 3296 g for singletons, with 67 percent of twins weighing less than 2500 g [1]. Despite this it is a common practice to use a singleton fetal growth standard to assess twin growth [1,5]. Using singleton curves to our twin pairs: the first of the twins weighing 4500 g is macrosomic and the smaller of the twins (3500 g) was appropriate for gestational age and heavier than an average singleton baby at birth (3296 g).

As twins growth patterns diverge from singleton growth in the third trimester, separate standards in order to evaluate twins growth appropriately was developed by researchers [1,5]. Among these, Zhang et al. [5] created an adjustable birth weight standard for twins that has an excellent match with the observed birth weight data in different races from 24 to 38 weeks gestation [5]. On this fetal weight standard matched for blacks, both babies in our case were large for gestational age (>observed 90th percentiles at 38 weeks of gestation for blacks: 3325 g): a finding different from by the use of singleton growth standard. Therefore, this is an exceptional and probably the first case where discordant twins, both large for gestational age were reported based on this adjustable twins standard.

Macrosomia in singleton births may be related to: male sex, maternal diabetes, maternal weight gain, maternal obesity and post-term gestation [3,4]. Whether these factors also affect twin birth weight is controversial. For example, gestational diabetes did not increase the risk of macrosomia or weight discrepancy of twin newborns in one study [6]. Macrosomia is an important cause obstetrics complications. Maternal complications include, postpartum hemorrhage, prolonged labor, caesarean delivery, and neonatal complication include shoulder dystocia, brachial plexus injury, skeletal injuries, meconium aspiration, perinatal asphyxia, hypoglycemia, hypocalcemia, clavicular fracture [3,4]. There was no much information on clinical implication of macrosomia in twins due to its rarity, but we believe that screening and treating any complication associated with it as in singleton macrosomic babies and follow up to detect long term metabolic effects is warranted. In addition, determining, if possible, the etiology of macrosomia [3] should be attempted. In our case, as a limitation, these things are not done as the patient was transferred from rural health center late.

Discordancy in dichorionic twins is likely due to a variety of factors including different genetic growth potential (especially if they are of opposite genders), one of the placentas would have a suboptimal implantation site, in utero crowding [1]. In our inference, in this case, difference in gender and placental sites might have contributed to the discordance. In addition because dizygotic twins are genetically distinct individuals, it is not surprising that they might be programmed to have very different weights at birth. In this regard discordance up to 10 percent can be considered normal [2]. With increasing discordance (>18%) the risk of adverse perinatal outcome remains increased within a growth-discordant pair even where both twins were appropriate for gestational age [2]. Whether discordant pairs where one or both of the foetuses were large for gestational ages are at risk of adverse effect is not known, as this is rare occurrence in twins.

Early diagnosis of twin pregnancy helps to identify associated maternal and perinatal complications timely, and take appropriate measures to deal with them [1,2]. In our cases, however, in spite of regular ante natal care follow up and having reported current pregnancy being heavier than the previous ones, the diagnosis of both twin pregnancy and its complications (malpresentation, growth abnormalities, and labor abnormalities) were delayed. She was transferred to higher facility after prolonged labor with malpresentation. This delay on diagnosis could have been prevented and, early work up and intervention made had the patient been referred to higher facility on time. Therefore appropriate feedback and mentoring of health care providers in rural health centers should be encouraged.

Conclusion

In conclusion this exceptional case is reported to show possibility of birth weight discordance with macrosomic-normal birth weight twin pairs: an out of the box presentation. The twins reported were both large for gestational age on adjustable birth weight standard for twins by Zhang et al. [5]. Early diagnosis of twin pregnancy and transfer to appropriate centre should be encouraged, to identify complications timely and deal with them accordingly.

Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

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